# NUCLEONICS

## INDEX to VOLUME 12, January–December, 1954

### SUBJECT INDEX*


**Absorption** (See also *Shielding*)
Gamma absorptiometry: a new tool for analytical chemistry. M. Leboeuf *et al* ...Aug. 18
Gamma-ray backscattering. G. Hine, R. McCall ...Apr. 27
**Accelerators**
AEC authorizes two new heavy-particle machines (*N*) ...July 88
AEC favors locating accelerators at national laboratories (*N*) ...Feb. 75
Betatron X-rays: how much concrete for shielding? F. Kirn, R. Kennedy ...June 44
Bevatron is most powerful (*PC*) ...May 474
Cockcroft-Walton, 1.2 Mev, operates in India (*N*) ...Feb. 78
Cosmotron planned by midwest schools (*N*) Feb. 74
Electron linear accelerators for processing. D. Dewey, II, *et al* ...Dec. 40
Mobile shield for cyclotron target removal. R. Blomgren, N. Bohlin ...Nov. 62
Pulsed neutron source (*TA*) ...Dec. 62
Research reactors: what you need to know to build one. Reactors vs other nuclear machines ...Apr. 14
Simple radiation shielding doors. W. Wadey (*CS*) ...May 54
Synchrotron, 25 Bev, to be built at Brookhaven (*N*) ...Feb. 75
Synchrotrons: one built, another planned in Italy (*N*) ...Feb. 78
Unusual synchrotron (*TA*) ...Oct. 68
**Air Pollution** (See *Health Physics*)
**Alpha Particles**
Activation analysis with nuclear emulsions. G. Mayr (*CS*) ...May 58
**Architecture**
High-radiation-level analytical laboratory. E. Frederick ...Nov. 36
Hot cell for testing MTR-irradiated specimens. M. Bartz, J. Burnham, Jr. ...Nov. 42
Lab for radiochemistry, metallurgy tests. R. Fisher, G. Winders ...Nov. 44
Low-radiation-level metallurgy cell. A. Lumbert ...Nov. 38
Operating busy hot cells. S. Dismuke ...Nov. 89
**Argentina**
Odlum submits power plan (*N*) ...Nov. 126
**Atomic Energy Commission**
Abolishes office of industrial development (*N*) June 9
A new era of cooperation (*Edit*) ...June 11
Administrative policy tightens information program (*N*) ...Jan. 73
Adspice, respice, prospice (*Edit*) ...July 7
Approves TVA nuclear power study (*N*) ...Feb. 74
Army reactor branch formed with Lampert as head (*N*) ...May 78
Asks bids for MTR irradiation facility (*N*) ... Nov. 124
Asks $22.3-million for equipment in 1955 (*N*) July 94
Authorizes three new industrial reactor studies (*N*) ...May 78
Authorizes two new heavy-particle machines (*N*) ...July 88
Awards 20 more research contracts (*N*) ...Nov. 128
Campbell named U. S. Controller General (*N*) ...Dec. 71
Chemists top list of employees (*N*) ...Sept. 82
Comparing commercial and AEC instrument supply (*N*) ...Feb. 75
Continues instrument development (*N*) ...July 86
Cooperates with REA (*N*) ...Nov. 129
Cuts budget request, revises spending plans (*N*) ...Apr. 78
Cuts Mound research, cancels Spoon River plant (*N*) ...Jan. 74
Duquesne Light Co. plan accepted for first U. S. central-station nuclear plant (*N*) ...Apr. 78
Eisenhower signs bill providing $1.2-billion for 1955 (*N*) ...Aug. 62
Eisenhower submits largest atomic energy budget (*N*) ...Feb. 74
Employs 13,582 scientists, engineers (*N*) ...Mar. 80
Favors locating accelerators at national laboratories rather than universities (*N*) ...Feb. 75
Feed materials program being expanded in $67-million three-year program (*N*) ...Nov. 118
Five northwest utilities to study nuclear power (*N*) ...July 86
Four new power reactors proposed (*N*) ...Apr. 78
House cuts budget, approves reactor program (*N*) ...May 75
Instrument dollar is split four ways (*PC*) ...Sept. 85
Issues package reactor bid invitations to 33 companies (*N*) ...June 9, Aug. 56
Leakproof pump program expanded with Navy (*N*) ...Aug. 58
Libby named as Smyth resigns (*N*) ...Oct. 76
MTR facilities opened to broader research use (*N*) ...July 86
Organization revamped (*N*) ...Nov. 33
Pennsylvania Power industrial study approved (*N*) ...Nov. 121
Quarters outside Washington wanted (*N*) Oct. 79
Reactor of the year proposed for industry (*N*) Aug. 6
Regulations for stable, radioisotopes revised (*N*) ...Oct. 81
Reorganization causes more changes (*N*) Sept. 86
Reorganization underway (*N*) ...May 77
Reports progress in 16th report (*N*) ...Aug. 5
Research reactors: what you need to know to build one. AEC policy. T. Johnson ...Apr. 8
Research reactors: what you need to know to build one. What the contract with AEC calls for. H. Roth ...Apr. 9
Reviewers to meet, plan for tripartite declassification conference (*N*) ...Feb. 75
Split over role of chairman aired (*N*) ...July 87
Sterilization program transferred to Army (*N*) May 78
Strauss-Nichols team molds atomic program (*N*) ...June 76
Total expenditures rise, capital spending has peaked (*PC*) ...Mar. 74
Two new reactor studies authorized (*N*) ...Nov. 33
U. S. power reactor program—goal: economic power in 10 years ...July 48; (corr.) ...Oct. 74
What will funds be used for in 1955? (*N*) ...June 84
Will spend $242-million on 5-year power reactor program (*N*) ...May 72
**Atomic Weapons** (See *Weapons*)
**Australia**
Includes reactor in 5-year development plan (*N*) ...Dec. 72
**Autoradiography** (See also *Radiography*)
Autoradiographic studies of surface detail with chromium-51. L. Preuss ...Aug. 30
Gamma-ray pinhole cameras (*TA*) ...Oct. 68
Simplified autoradiography exposure calculation. W. Wainwright *et al* ...an. 19
Using autoradiography for quantitative study of U in ore. A. Bhatnagar, P. Ghosh (*CS*) Apr. 58

**Belgium**
Negotiates with U. S. on Congo ore (*N*) ...Apr. 80
Signs Swiss pact to trade data, uranium (*N*) ... Oct. 76
Uranium fabrication process (*NE*) ...Aug. 53
U. S. aid helps build first reactor; bargaining underway for more information (*N*) ...Aug. 56
**Beta Rays**
Electron energy distributions produced by gamma-rays. H. Johns *et al* ...Oct. 40
Experimental techniques in beta-ray spectroscopy-II. C. Cook ...Feb. 43
Photographic detection and dosimetry of beta rays. R. Dudley ...May 24
Relative merits of cathode rays and gamma radiations. S. Goldblith, B. Proctor ...Feb. 32; (corr.) Sept. 76; (reply) S. Goldblith, B. Proctor ...Nov. 114
Scintillation probe for determining relative beta-ray intensities. W. Ittner III, M. Ter-Pogossian (*CS*) ...May 56
Solid-sample beta determinations with a liquid scintillation counter. F. Terentiuk (*CS*) ... Jan. 61
Standardization of beta-emitting nuclides. H. Seliger, A. Schwebel ...July 54
The best performance from beta gages. L. Zumwalt ...Jan. 55
**Biology** (See also *Medical Physics and Research*)
A biosynthesis of carbon-14 labelled glycogen. C. Hassett *et al* (*CS*) ...Apr. 59
Advances in isotope techniques. R. Faires *et al* ...Oct. 48
Biological applications of tritium. R. Thompson ...Sept. 31; (corr.) ...Nov. 117
Dose received by thermal neutron treated *drosophila melanogaster*. R. King (*CS*) ... Sept. 58
Effect of X-irradiation on tissue hydration in the mouse. R. Rugh ...Jan. 28
How biological effectiveness varies with X-ray energy. W. Moos ...May 46
Problems in using high-voltage electrons for sterilization. W. Bellamy, E. Lawton ...Apr. 54
Radioactivity in animal thyroids from various areas. L. VanMiddlesworth (*CS*) ...Sept. 56
The biological effectiveness of thermal neutrons on mice. J. Brennan *et al* ... Part 1 Feb. 48, Part 2 Apr. 31
The international picture: progress in radiobiology. H. Patt ...Dec. 42
What is the recovery factor in spleen? D. Barnes, J. Loutit (*LE*) ...May 68
Zirkle heads NRC radiobiology unit (*N*) ...Jan. 75
**Book Reviews**
"Annual Review of Nuclear Science, Vol. 3" edited by James G. Beckerley ...June 72
"Applied Atomic Energy" by K. Fearnside *et al* ...Oct. 70
"Atomic Medicine" edited by Charles F. Behrens ...May 66
"Biological Effects of External X and Gamma Radiation, Part 1" by Raymond E. Zirkle ... July 78
"Dislocations in Crystals" by W. T. Read, Jr. ...June 73
"Experimental Nuclear Physics, Vol. 2" by E. Segre ...Feb. 70
"Introduction to Experimental Physics" by W. B. Fretter ...July 78
"Introduction to Nuclear Engineering" by Richard Stephenson ...Nov. 104
"Isotopic Tracers" by G. E. Francis *et al* ... Nov. 102
"Luminescence and the Scintillation Counter" by S. C. Curran ...Jan. 70
"Magnetic Cooling" by C. G. B. Garrett ..July 78
"Metallurgy of the Rarer Metals—2-Zirconium" by G. L. Miller ...Dec. 58
"Neutron Optics" by D. J. Hughes ...Aug. 54
"Noise" by Aldert Van Der Ziel ...Dec. 58
"Nuclear Moments" by Norman F. Ramsey .. Apr. 68
"Nuclear Physics" by W. Heisenberg ...Sept. 74
"Nuclear Theory" by Robert G. Sachs ..May 64
"Optical Instrumentation" edited by G. S. Monk and W. H. McCorkle ...Nov. 108
"Planning Guide for Radiologic Installations," The American College of Radiology ...June 72
"Progress in Cosmic Ray Physics, Vol. 2" edited by J. G. Wilson ...May 64
"Radiations and Living Cells" by F. G. Spear Mar. 68
"Report on the Atom" by Gordon Dean ..Feb. 71
"Scintillation Counters" by J. B. Birks ..Mar. 68
"Theoretical Nuclear Physics" by John M. Blatt and V. F. Weisskopf ...Mar. 70
"The Physics of Radiation Therapy" by Harold Elford Johns ...Apr. 68
"The Quantum Theory of Radiation" by W. Heitler ...Nov. 107

**Canada**
Agency invests in nuclear-power study (*N*) ... Jan. 72
**Cancer** (See *Medical Physics and Research*)
**Carbon** (See also *Nuclear Reactors, Materials*)
Carbon-14 compounds offered by PHS for medical studies (*N*) ...Feb. 75
Low-level counting, key to advances in radiocarbon dating. J. Kulp ...Dec. 19
**Chemical Processing** (See also *Industrial Applications*)
A continuously separating breeder blanket using $ThF_4$. F. Miles *et al* ...July 26
Fission-product separations plant for ORNL (*N*) ...Nov. 127
Fuel processing loops: how they are being developed. C. Raseman, J. Weisman ...July 20
Fused salts for removing fission products from U-Bi fuels. D. Bareis *et al* ...July 16
Liquid-metal fuels and breeder blankets. R. Teitel *et al* ...July 14
Ultimate disposal of radioactive wastes. L. Hatch *et al* ...Dec. 14
**Chemistry**
Activation analysis determines sodium content of aluminum alloys. R. Plumb, R. Silverman ...Dec. 29
Chemists top AEC list of technical employees (*N*) ...Sept. 82
Determining mesothorium content of thorium nitrate. M. Allison *et al* ...May 32
Equipment for remote chemical separations. L. Miller, E. Kinderman ...Nov. 82
Gamma absorptiometry: a new tool for analytical chemistry. M. Leboeuf *et al* ...Aug. 18
High-radiation-level analytical laboratory. E. Frederick ...Nov. 36
Hydraulically operated remote pipetter. K. Hammill ...Nov. 52
Keeping costs down in an analytical hot lab. E. Christopherson ...Nov. 94
Lab for radiochemistry, metallurgy tests. R. Fisher, G. Winders ...Nov. 44
"Molecular sieves" (*TA*) ...Dec. 62
Photometric determination of uranium in thorium. L. Silverman, L. Moudy (*CS*) ... Sept. 60
Remodeling a high-level chemistry cell. B. Coplan, D. Smith ...Nov. 92
Separating transplutonium isotopes from irradiated plutonium. W. Ruehle, Jr. ..Nov. 84
Water-boiler data: composition, decontamination of radioactive gas mixtures. H. Busey May 9
**Chromium**
Autoradiographic studies of surface detail with chromium-51. L. Preuss ...Aug. 30
**Cobalt**
Analysis of radiation fields of two gamma-radiation sources. J. Lewis *et al* ...Jan. 40
An economical water- and earth-shielded cobalt-60 gamma-ray source. H. Schwarz, A. Allen (*CS*) ...Feb. 58
Available cobalt-60 source for teletherapy. M. Brucer (*CS*) ...Aug. 45
Cobalt-60 unit for checking thimble chambers. E. Trout *et al* (*CS*) ...Oct. 58
Costs and safe operation of modified irradiation unit. J. McLaughlin, Jr., H. Blatz (*CS*) ... Mar. 63


* The notation "*(Edit)*" indicates reference is an editorial; "*(N)* *News;* "*(NE)* *Nuclear Engineering;* "*(LE)* *Letters to the Editor;* "*(PC)* photograph and caption; "*(CS)* *Cross Sections;* "*(TA)* *Technical Advances;* "*(IA)* *Industrial Applications.*

Design and performance of a portable irradiation unit. L. Stang, Jr. *et al* (*CS*)....Mar. 62
Device for loading cobalt-60 cartridges in tubing for cancer therapy. G. Callendine, Jr., J. Morton (*CS*).....Apr. 62
Isotope capsule for pneumatically operated calibration facilities. B. Markow, W. Gallas (*CS*).....May 60
Standardized cobalt-60 source capsule for teletherapy. M. Brucer (*CS*).....June 58
**Congressional Committee, Joint, on Atomic Energy**
Proposes overhaul of Atomic Energy Act (*N*)..May 74
Public hearings underway on Atomic Energy Act (*N*).....June 77
Reactor subcommittee renamed, expanded (*N*)..Mar. 76
**Controls, Remote** (See *Remote Controls and Handling Apparatus*, and *Nuclear Reactors, Controls*)
**Counters** (See *Instruments, Detection*)
**Cross Sections, Nuclear**
Nuclear constants in reactor design. H. Bethe (*NE*).....Sept. 70
**Crystals** (See *Instruments, Detection, Scintillation*)
**Cyclotrons** (See *Accelerators*)

**Dating**
Low-level counting, key to advances in radiocarbon dating. J. Kulp.....Dec. 19
**Decontamination**
Decontamination characteristics of porcelain enamel. G. Parker, G. Hebert.....Nov. 72
How important is surface contamination? M. Eisenbud *et al*.....Aug. 12
Mechanical shoe sander. J. Austin (*CS*) Feb. 64
Remodeling a high-level chemistry cell. B. Coplan, D. Smith.....Nov. 92
Two inexpensive decontamination units. O. Olson, J. Gifford (*CS*).....May 55
Unitized handling of irradiated fuels. L. Sullivan.....Nov. 96
**Dosimetry**
Analysis of radiation fields of two gamma-radiation sources. J. Lewis *et al*.....Jan. 40
Automatic isodose plotter. G. Mauchel, H. Johns (*CS*) .....Dec. 50
Density effect in $\gamma$-ray measurements. G. Whyte.....Feb. 18
Electron energy distributions produced by gamma-rays. H. Johns *et al*.....Oct. 40
Evaluating reactor hazards from airborne fission products. R. Mesler, L. Widdoes..Sept. 39
Fast-neutron dose in a large tissue-equivalent phantom. T. Barr, G. Hurst.....Aug. 33
Fast-neutron dosimetry in a small tissue-equivalent phantom. W. Mills, G. Hurst..Apr. 17
Fast-neutron scattering: a correction for dosimetry. J. Cure, G. Hurst.....Aug. 36
Film badge dosimetry: how much fading occurs? W. McLaughlin, M. Ehrlich....Oct. 34
Fission product kilocurie source: preparation, radiation intensity. J. Loeding *et al*...May 14
Gamma-ray dosimetry with cellophane-dye systems. E. Henley (*CS*).....Sept. 62
How to use gas evolution for dosimetry of high gamma, neutron fluxes. E. Hart, S. Gordon..Apr. 40
Nuclear emulsion instability. J. Cheka (*CS*)..Oct. 58
Optimum shape for cylindrical ionization chambers. R. Clark, S. Brar.....Aug. 28
Photographic detection and dosimetry of beta rays. R. Dudley.....May 24
Recent developments in film monitoring of fast neutrons. J. Cheka.....June 40
Simplified film processing for radiation dosimetry. R. Magill (*CS*).....Aug. 43
Using cobalt-60 and fission products in pork irradiation experiments. H. Gomberg *et al*..May 38
**Dry Boxes** (See *Equipment*)

**Education** (See also *Meetings*)
AEC, NSF support research, Fulbright awards continue (*N*).....Sept. 84
Fellowships offered in medical research (*N*)..Oct. 80
Massachusetts Institute of Technology starts $6-million nuclear science project (*N*)..Nov. 122
Midwestern schools plan new cosmotron (*N*)..Feb. 74
Nuclear pedagogy gains in two eastern schools (*N*).....Sept. 85
ORSORT prepares for 300th student (*N*) Feb. 76
Penn State to build reactor. W. Breazeale (*NE*).....Feb. 72
Radioisotopes techniques to be taught (*N*)..Mar. 81
Weinberg says we need: "a scholarly tradition in nuclear development." A. Weinberg..Sept. 20

**Equipment** (See also *Remote Controls and Handling Apparatus*)
Advantages of ultrasonic cleaning. M. Feldman.....Nov. 65
Hot-lab Fiberglas air filters. J. Gifford..Nov. 54
Low-cost plastic sealer. H. Susskind....Nov. 61
Operating procedures of a hot lab for solid-state tests. E. Rylander, R. Blomgren....Nov. 98
Remodeling a high-level chemistry cell. B. Coplan, D. Smith.....Nov. 92
Two inexpensive decontamination units. O. Olson, J. Gifford (*CS*).....May 55

**Fillings, Counter** (See *Instruments, Detection*)
**Films** (for photographic films, see also *Instruments*)
Gamma-ray dosimetry with cellophane-dye systems. E. Henley (*CS*).....Sept. 62
**Filters**
Hot-lab Fiberglas air filters. J. Gifford..Nov. 54
**Fission Products** (See *Isotopes, Gross Fission Products*)
**Foils** (See *Instruments, Detection* and *Films*)
**Food Processing** (See *Industrial Applications*)
**France**
Atomic energy research in England and France. D. J. Hughes (*N*).....July 88
Development of the second French reactor. L. Kowarski.....Aug. 8
Private companies join atomic operation (*N*)..Nov. 124

**Gages** (See *Industrial Applications* and *Instruments*)
**Gamma Rays**
Activation of nuclear isomers by gamma rays. G. Harbottle (*CS*).....Apr. 64
Analysis of radiation fields of two gamma-radiation sources. J. Lewis *et al*.....Jan. 40
Density effect in $\gamma$-ray measurements. G. Whyte.....Feb. 18
Electron energy distributions produced by gamma-rays. H. Johns *et al*.....Oct. 40
Fission product kilocurie source: preparation, radiation intensity. J. Loeding *et al*..May 14
Gamma absorptiometry: a new tool for analytical chemistry. M. Leboeuf *et al*.....Aug. 18
Gamma counting efficiency of two well-type NaI crystals. R. Baskin *et al* (*CS*)...Aug. 46
Gamma dose rate from a Po-Be source. G. Rausa (*CS*).....Feb. 62
Gamma-ray backscattering. G. Hine, R. McCall.....Apr. 27
Gamma-ray dosimetry with cellophane-dye systems. E. Henley (*CS*).....Sept. 62
Gamma-ray scintillation counter for weak radioactive solutions. C. Haigh.....Jan. 34
Gamma-ray spectrum of the bulk shielding reactor. F. Maienschein, T. Love.....May 6
How to use gas evolution for dosimetry of high gamma, neutron fluxes. E. Hart, S. Gordon..Apr. 40
In a heavy-water reactor: how do gamma rays affect reactivity? A. Lundby.....Aug. 25
K-9: a large $4\pi$ gamma-ray detector. M. Van Dilla *et al*.....Sept. 22
Radiations' relative merits. E. Henley (*LE*)..Sept. 76
Relative merits of cathode rays and gamma radiations. S. Goldblith, B. Proctor...Feb. 32; (corr.) Sept. 76; (reply) S. Goldblith, B. Proctor.....Nov. 114
Testing electrical insulation for use in gamma-ray fields. C. Mannal.....June 49
**Genetics**
The international picture: progress in radiobiology. H. Patt.....Dec. 42
**Geometry**
Optimum shape for cylindrical ionization chambers. R. Clark, S. Brar.....Aug. 28
**Gold**
Radiogold administration. D. Tabern (*CS*)..Sept. 57
**Great Britain**
Atomic energy research in England and France. D. J. Hughes (*N*).....July 88
British developments in atomic energy. Sir C. Hinton.....Jan. 6
British operate fast breeder prototype (*PC*)...Mar. 61
DIMPLE operates: first British heavy-water reactor (*N*).....Sept. 82
Harwell to sponsor isotope meeting (*N*)...Jan. 74
How Britain produces fissionable materials...Feb. 31
Nuclear power station model (*PC*).....Feb. 74
Passes U. S. in shipping isotopes (*N*)....Aug. 57
Reorganize British atomic program.....Jan. 7
Steam generators for Calder Hall reactors (*NE*).....Sept. 72

**Health Physics** (See also *Medical Physics and Research*)
Automatic sampler, recorder. A. Hosey *et al* (*CS*).....Dec. 52
Administrative problems in radiation protection. I. Tabershaw, S. Harris.....Dec. 8
Design and performance of a disposal plant for radioactive wastes. J. Leary *et al*.....July 64
Developments in internal dose determinations. K. Morgan, M. Ford.....June 32
Estimating radium and uranium surface contamination. E. Barry *et al* (*CS*).....Feb. 59
Evaluating reactor hazards from airborne fission products. R. Mesler, L. Widdoes...Sept. 39
Film badge dosimetry: how much fading occurs? W. McLaughlin, M. Ehrlich..Oct. 34
Hot-lab Fiberglas air filters. J. Gifford..Nov. 54
How important is surface contamination? M. Eisenbud *et al*.....Aug. 12
Interpreting background data from scintillation detectors. L. Solon *et al*.....May 50
Keeping costs down in an analytical hot lab. E. Christopherson.....Nov. 94
Measurement of breath radon by charcoal adsorption. J. Hursh (*CS*).....Jan. 62
Operating busy hot cells. S. Dismuke...Nov. 89
Operating procedures of a hot lab for solid-state tests. E. Rylander, R. Blomgren....Nov. 98
Radiological safety in cathode-ray sterilization. S. Levin.....June 54
Tracers and scrap steel. H. Blatz (*LE*). Mar. 83
Trends in nuclear instrumentation. D. Taylor Oct. 12; (corr.) Dec. 68
**Heat Transfer** (See also *Nuclear Reactors, Materials*)
Boiling reactors: direct steam generation for power. S. Untermyer.....July 43
Heat exchange in LMF power reactor systems. O. Dwyer.....July 30
Thermodynamic properties of liquid sodium. J. Lee (*NE*).....Apr. 74
**Hot Laboratories**
Hot Labs (A NUCLEONICS special report)...Nov. 35
Design.....36
General-purpose manipulators.....45
Equipment.....50
Operation.....65
Administrative problems.....89
The new radiometallurgy laboratory at Hanford.....Jan. 26

**India**
New accelerator operating; Nehru, at cornerstone laying of Tata Institute, promises no secrecy (*N*).....Feb. 78
New home of Tata Institute (*PC*).....July 90
**Industrial Applications**
Activation analysis determines sodium content of aluminum alloys. R. Plumb, R. Silverman.....Dec. 29
Advances in isotope techniques. R. Faires *et al*.....Oct. 48
Award established for isotope applications (*N*) Feb. 78
Beta-gage performance (*IA*).....Dec. 64
Built-in thickness gage (*IA*).....Oct. 72
Cigarette-machine controller (*IA*).....Oct. 72
Does irradiation induce radioactivity in food? W. Meinke.....Oct. 37
Dye carry-over protection (*IA*).....Oct. 72
Economics of pork irradiation. H. Gomberg *et al* (*NE*).....Sept. 66
Electron linear accelerators for processing. D. Dewey, II, *et al*.....Dec. 40
Evaluating the safety of radiation-sterilized foods. A. Lehman, E. Laug.....Jan. 52
H/C ratio determination (*IA*).....Oct. 72
How radiation affects long-chain polymers. A. Charlesby.....June 18
How to prepare and use radioactive soils. J. Lambert *et al*.....Feb. 40
Human feeding studies of irradiated food to start; Army tests will hasten commercial application (*N*).....Sept. 78
Improved storage quality of potato tubers after exposure to cobalt-60 gammas. A. Sparrow, E. Christensen.....Aug. 16
Industry can save billion with isotopes, says AEC (*N*).....Sept. 84
Measuring the time of fall of a labeled plummet. A. Rogers *et al* (*CS*).....June 62
"Molecular sieves" (*TA*).....Dec. 62
Problems in using high-voltage electrons for sterilization. W. Bellamy, E. Lawton..Apr. 54
Radiation laboratory being prepared by GE (*N*).....Feb. 74
Radiations' relative merits. E. Henley (*LE*)..Sept. 76
Radioactive tracers for tagging special steel melts. D. Douglas.....Jan. 16
Radiography as a hot-lab service. J. Austin, P. Richards.....Nov. 78
Radioisotope versatility (*IA*).....Dec. 64
Radiological safety in cathode-ray sterilization. S. Levin.....June 54
Relative merits of cathode rays and gamma radiations. S. Goldblith, B. Proctor...Feb. 32; (corr.) Sept. 76; (reply).....Nov. 114
Silt-density gage (*IA*).....Oct. 72
Sterilization program transferred from AEC to Army (*N*).....May 78
The best performance from beta gages. L. Zumwalt.....Jan. 55
Tracers and scrap steel. H. Blatz (*LE*). Mar. 83
Using cobalt-60 and fission products in pork irradiation experiments. H. Gomberg *et al* May 38
Words of prophecy. Z. Jeffries.....July 8
**Industry**
Administrative problems in radiation protection. I. Tabershaw, S. Harris.....Dec. 8
AEC comparing commercial and AEC instrument supply (*N*).....Feb. 75
American Locomotive Co. forms atomic projects unit (*N*).....Aug. 57
Bethlehem Steel Co. authorized to study ship reactors (*N*).....Nov. 34
Big market for reactors developing rapidly (*N*).....Nov. 127
Business considers atomic energy future (*N*)..Mar. 74

Coal company studies nuclear power (*N*) Mar. 76
Dow and Detroit Edison splitting power group (*N*) Nov. 118
Dow-Detroit study gets $2.5-million for 1954 (*N*) Sept. 80
Duquesne Light Company plan accepted for first U. S. central-station nuclear power plant (*N*) Apr. 78
Former liaison head joins investment group (*N*) Nov. 129
French atomic operation joined by private companies (*N*) Nov. 124
General Electric forms unit to market atomic power equipment (*N*) Oct. 77
General Electric preparing new radiation laboratory (*N*) Feb. 74
General Electric studying economics of nuclear power (*N*) Mar. 80
Nine groups offered to build, operate PWR (*N*) June 83
North American Aviation building new nuclear lab (*N*) Oct. 81
North American Aviation delivers research reactor to California Research Corp. (*N*) Feb. 78
Nuclear Development Associates minority interest bought by Rockefellers (*N*) Oct. 77
Nuclear Instrument and Chemical Corp. establishes isotope application award (*N*) Feb. 78
Nuclear power industry needs capital guarantee (*N*) Jan. 74
Nuclear Science and Engineering Corp. offers nuclear lab services (*N*) Oct. 76
Pennsylvania Power gets AEC approval for power study (*N*) Nov. 121
Reliance on radioisotopes increases (*N*) Mar. 76
Rocky Mountain Nuclear Power Study Group authorized (*N*) Nov. 33
Unlimited future seen for uranium industry (*N*) Mar. 81
U. S. isotope authorizations increase (*PC*) Mar. 75
U. S. power reactor program—goal: economic power in 10 years July 48; (corr.) Oct. 74
Vitro Corp. starts power processing study (*N*) Sept. 80
Westinghouse changes atomic power unit (*N*) Oct. 78
Yankee Atomic Electric Co. wants New England nuclear plant (*N*) Oct. 77

**Information**
Administrative policy tightens AEC information program (*N*) Jan. 73
Administrative problems in radiation protection. I. Tabershaw, S. Harris Dec. 8
AEC reviewers to meet, plan for tripartite declassification conference (*N*) Feb. 75
Atomic Energy Act of 1954 creates new security and information setup (*N*) Sept. 5
Eisenhower proposes international agency (*N*) Jan. 72
Freedom and progress (*Edit*) Aug. 7
Research reactors: what you need to know to build one. Secrecy. J. Beckerley Apr. 15
Three nations will release more power-reactor data (*N*) Jan. 73
Weinberg says we need: "a scholarly tradition in nuclear development." A. Weinberg Sept. 20
Words of prophecy. Z. Jeffries July 8

**Instruments, Detection, G-M & Proportional**
Automatic sampler, recorder. A. Hosey *et al.* (*CS*) Dec. 52
Evaluating the performance of the internal counter. J. Nader *et al.* June 29
Experimental techniques in beta-ray spectroscopy—II. C. Cook Feb. 43
Go, no-go radiation detector. H. LeVine (*CS*) Jan. 62
Resolution losses in counters and trigger circuits. P. Damon, P. Winters Dec. 36
Which iodine-131 counting system is best for laboratory use? J. Weisburger, H. Lipner May 21

**Instruments, Detection, Ion Chamber**
AEC comparing commercial and AEC supply (*N*) Feb. 75
Optimum shape for cylindrical ionization chambers. R. Clark, S. Brar Aug. 28
The best performance from beta gages. L. Zumwalt Jan. 55

**Instruments, Detection, Photographic and Optical**
Activation analysis with nuclear emulsions. G. Mayr (*CS*) May 58
Film badge dosimetry: how much fading occurs? W. McLaughlin, M. Ehrlich Oct. 34
Nuclear emulsion instability. J. Cheka (*CS*) Oct. 58
Photographic detection and dosimetry of beta rays. R. Dudley May 24
Recent developments in film monitoring of fast neutrons. J. Cheka June 40
Simplified film processing for radiation dosimetry. R. Magill (*CS*) Aug. 43

**Instruments, Detection, Scintillation**
Aerial prospecting with scintillation counters. G. Cowper Mar. 29
Economical scintillation scanner. T. Sopp *et al* (*CS*) Dec. 49
Automatic sample changer for well-type scintillation counter. H. Demorest, J. Erickson (*CS*) July 68
Compatible plastics for phosphors. C. Cohn (*LE*) July 82
Counting hydrogen-3 and carbon-14 (*TA*) Oct. 68
Fast-neutron scintillation survey meter. B. Thompson May 43
Gain variation of photomultiplier tubes. R. Caldwell, S. Turner (*CS*) Dec. 47
Gamma absorptiometry: a new tool for analytical chemistry. M. Leboeuf *et al.* Aug. 18
Gamma counting efficiency of two well-type NaI crystals. R. Baskin *et al* (*CS*) Aug. 46
Gamma-ray backscattering. G. Hine, R. McCall Apr. 27
Gamma-ray scintillation counter for weak radioactive solutions. C. Haigh Jan. 34
Gamma-ray spectrum of the bulk shielding reactor. F. Maienschein, T. Love May 6
Interpreting background data from scintillation detectors. L. Solon *et al* May 50
K-9: a large 4π gamma-ray detector. M. Van Dilla *et al* Sept. 22
Large scintillators. Cerenkov counters for high energies. A. Kantz, R. Hofstadter Mar. 36
Large-volume liquid scintillators: their applications. F. Harrison *et al* Mar. 44
New photomultipliers and operating data. B. Linden Mar. 20
Photovoltaic scintillation detector for high dose rates. R. Schuch *et al* Feb. 16
Potting photomultiplier tubes. R. Swank, J. Mopnich (*CS*) Aug. 41
Recent advances in theory of scintillation phosphors. R. Swank Mar. 14
Scintillation counting of natural uranium foils. R. Axtmann, J. Stutheit July 52
Scintillation counting today (A NUCLEONICS special report) Mar. 13
Phosphors and photomultipliers 14
General applications 29
High energy and cosmic rays 36
Spectrometry 51
Scintillation detector for carborne and airborne use. F. Davis *et al* (*CS*) Dec. 46
Scintillation probe for determining relative beta-ray intensities. W. Ittner, III, M. Ter-Pogossian (*CS*) May 56
Simple efficient shield for well-type scintillation crystals. J. Irvine, Jr. (*CS*) Oct. 62
Slow component in decay of fluors. F. Harrison Mar. 24
Solid-sample beta determinations with a liquid scintillation counter. F. Terentiuk (*CS*) Jan. 61
Total-absorption X-ray spectrometry: application to betatron experiments. H. Koch, R. Foote Mar. 51
Which iodine-131 counting system is best for laboratory use? J. Weisburger, H. Lipner May 21

**Instruments, Electronic**
A source of sockets. D. Morken (*LE*) July 82
Automatic data processing (*TA*) Oct. 68
Electric recorder for the gammagraph. M. Jacobs *et al* (*CS*) Jan. 60
Logarithmic d-c ratemeters for scintillation counters. H. LeVine Feb. 36
More about PM sockets. R. Arp (*LE*) Sept. 77
Reliable scaling circuits for decade tubes. J. Baker, G. Eichholz Apr. 44
Resolution losses in counters and trigger circuits. P. Damon, P. Winters Dec. 36
Simple, general-purpose pulse generator. H. May (*CS*) July 70
Trends in nuclear instrumentation. D. Taylor Oct. 12; (corr.) Dec. 68

**Instruments, Laboratory**
H/C ratio determination (*TA*) Oct. 72
Low-cost plastic sealer. H. Susskind Nov. 61
Remote metallographic equipment—I. Remote microscopy. S. Paine *et al* Nov. 56
Small flexible thermocouple (*PC*) May 62

**Iodine**
Distillation of "carrier-free" iodine-131 activity. M. Kahn *et al* (*CS*) July 72
Production of iodine-132. L. Stang, Jr. *et al.* Aug. 22
Simplified method for determining thyroid function with radioiodine. J. Lewis (*CS*) June 59
Which iodine-131 counting system is best for laboratory use? J. Weisburger, H. Lipner May 21

**Ionization Chambers** (See *Instruments, Detection, Ionization Chamber*)

**Irradiation** (See also *Industrial Applications,* and *Nuclear Reactors*)
Argonne offers CP-5, EBR facilities (*N*) Nov. 126
Biological applications of tritium. R. Thompson Sept. 31; (corr.) Nov. 117
Costs and safe operation of modified irradiation unit. J. McLaughlin, Jr., H. Blatz (*CS*) Mar. 63
Design and performance of a portable irradiation unit. L. Stang, Jr. *et al* (*CS*) Mar. 62
Does irradiation induce radioactivity in food? W. Meinke Oct. 37
Fission-product kilocurie source: preparation, radiation intensity. J. Loeding *et al* May 14
Improved storage quality of potato tubers after exposure to cobalt-60 gammas. A. Sparrow, E. Christensen Aug. 16
Isotope production: how to choose irradiation time. W. Lewis Oct. 30
Using cobalt-60 and fission products in pork irradiation experiments. H. Gomberg *et al* May 38

**Isotopes, Gross Fission Products**
Fission-product kilocurie source: preparation, radiation intensity. J. Loeding *et al* May 14
Ultimate disposal of radioactive wastes. L. Hatch *et al* Dec. 14

**Isotopes, Labeled Compounds**
A biosynthesis of carbon-14-labelled glycogen. C. Hassett *et al* (*CS*) Apr. 59
Biological applications of tritium. R. Thompson Sept. 31; (corr.) Nov. 117
How to prepare and use radioactive soils. J. Lambert *et al* Feb. 40
Labeling bovine and human albumin with iodine-131. R. Gilmore, Jr. *et al* (*CS*) Feb. 65
Machining radioactive materials. M. Simnad, P. Shewmon (*CS*) July 69
Measuring the time of fall of a labeled plummet. A. Rogers *et al* (*CS*) June 62
Radioactive tracers for tagging special steel melts. D. Douglas Jan. 16

**Isotopes, Radioactive**
Activation of nuclear isomers by gamma rays. G. Harbottle (*CS*) Apr. 64
Advances in isotope techniques. R. Faires *et al* Oct. 48
AEC revises regulations for stable, radioisotopes (*N*) Oct. 81
A gamma-ray source for sterilizing insects. E. Darden *et al* (*CS*) Oct. 60; (corr.) Dec. 68
An economical water- and earth-shielded cobalt-60 gamma-ray source. H. Schwarz, A. Allen (*CS*) Feb. 58
Britain passes U. S. in shipping isotopes (*N*) Aug. 57
Carbon-14 compounds offered by PHS for medical studies (*N*) Feb. 75
Cobalt-60 unit for checking thimble chambers. E. Trout *et al* (*CS*) Oct. 58
Developments in internal dose determinations. K. Morgan, M. Ford June 32
Distillation of "carrier-free" iodine-131 activity. M. Kahn *et al* (*CS*) July 72
Gamma dose rate from a Po-Be source. G. Rausa (*CS*) Feb. 62
Industry can save billion with isotopes, says AEC (*N*) Sept. 84
Industry reliance increases (*N*) Mar. 76
Isotope capsule for pneumatically operated calibration facilities. B. Markow, W. Gallas (*CS*) May 60
Isotope comparison. A. Rupp, C. Crompton (*LE*) Oct. 74
Isotope production: how to choose irradiation time. W. Lewis Oct. 30
Large-scale automatic storage and sampling unit. T. Trent, Jr., J. Wallace Nov. 70
New teletherapy unit has 10,000-curie source (*PC*) Sept. 82
New tracer: aluminum-26 (*TA*) Dec. 62
Operating a manipulator cell. E. Pierce Nov. 86
Procedure for digestion and radioassay of animal tissues. H. Cember *et al* (*CS*) Aug. 40
Production of iodine-132. L. Stang, Jr. *et al.* Aug. 22
Radiogold administration. D. Tabern (*CS*) Sept. 57
Remote liquid sampling: a completely automatic air-lift system. H. Duggan, J. Landry Nov. 67
Simplified autoradiography exposure calculation. W. Wainwright *et al* Jan. 19
Standardization of beta-emitting nuclides. H. Seliger, A. Schwebel July 54
Standardized cobalt-60 source capsule for teletherapy. M. Brucer (*CS*) June 58
U. S. isotope authorizations increase (*PC*) Mar. 75

**Italy**
CISE is planning power reactor (*N*) Aug. 62
Synchrotons: one built, another planned (*N*) Feb. 78

**Legislation**
Administrative problems in radiation protection. I. Tabershaw, S. Harris Dec. 8
Atomic Energy Law of 1954 signed by President (*N*) Sept. 78
Bar, electrical groups suggest law changes (*N*) Jan. 72
Congress certain to act on changes in Atomic Energy Act (*N*) Apr. 79
Eisenhower calls for end of government monopoly (*N*) Feb. 74
Eisenhower calls for legislation to foster industry (*N*) Mar. 74
House, Senate pass different versions of Atomic Energy Act; confer on differences (*N*) Aug. 5, 57
Joint Committee proposes overhaul of Atomic Energy Act (*N*) May 74
Public hearings underway on Atomic Energy Act (*N*) June 77
Reorganize British atomic program Jan. 7
Second version of Atomic Energy Act contains revisions (*N*) June 10
Time is factor in Atomic Energy Act revision (*N*) July 5

**Letters to the Editor**
Amplifiers: an amplification. P. Bell Dec. 68
An "editorial transfer." C. Sheppard Dec. 68
A source of sockets. D. Morken July 82
Compatible plastics for phosphors. C. Cohn July 82
$D_2O$: cost is key. J. Dunworth Feb. 73
First tritium production. J. Cloke Nov. 117
Higher-activity thulium. S. Untermyer July 82
How should fission products be evaluated? H. Gomberg *et al;* (reply) L. Crean *et al* Mar. 82
Interpreting wear studies. B. Colding Jan. 59
Isotope comparison. A. Rupp, C. Crompton Oct. 74
More about PM sockets. R. Arp Sept. 77
ORNL research reactor. J. Gill Dec. 69
Radiations' relative merits. E. Henley Sept. 76
Rebuttal on sources. S. Goldblith, B. Proctor Nov. 114

Research reactors: cost and performance. M. Fox; (reply) J. Lane ... July 82
Tracers and scrap steel. H. Blatz ... Mar. 83
What is the recovery factor in spleen? D. Barnes, J. Loutit ... May 68
Wrong reactor, right company. C. Barthelemy ... Oct. 74
**Lithium**
Postulate use as trigger in thermonuclear weapons (*N*) ... Feb. 78

**Manipulators** (See *Remote Control and Handling Apparatus*)
**Measurements**
Autoradiographic studies of surface detail with chromium-51. L. Preuss ... Aug. 30
Beta-gage performance (*IA*) ... Dec. 64
Density effect in gamma-ray measurements. G. Whyte ... Feb. 18
Electron energy distributions produced by gamma-rays. H. Johns *et al* ... Oct. 40
Evaluating the performance of the internal counter. J. Nader *et al* ... June 29
Fast-neutron scattering: a correction for dosimetry. J. Cure, G. Hurst ... Aug. 36
International commission recommendations: radiological units ... Jan. 11
International neutron-source calibrations. D. Hughes ... Dec. 26
Large scintillators, Cerenkov counters for high energies. A. Kantz, R. Hofstadter ... Mar. 36
Resolution losses in counters and trigger circuits. P. Damon, P. Winters ... Dec. 36
Slow component in decay of fluors. F. Harrison ... Mar. 24
Standardization of beta-emitting nuclides. H. Seliger, A. Schwebel ... July 54
Statistical purity in nuclear counting. O. Riedel (*CS*) ... June 64
The best performance from beta gages. L. Zumwalt ... Jan. 55
**Medical Physics and Medical Research** (See also *Health Physics*)
Advances in isotope techniques. R. Faires *et al* ... Oct. 48
Economical scintillation scanner. T. Sopp *et al* (*CS*) ... Dec. 49
Automatic isodose plotter. G. Mauchel, H. Johns (*CS*) ... Dec. 50
Available cobalt-60 source for teletherapy. M. Brucer (*CS*) ... Aug. 45
Carbon-14 compounds offered by PHS for medical studies (*N*) ... Feb. 75
Device for loading cobalt-60 cartridges in tubing for cancer therapy. G. Caliendine, Jr., J. Morton (*CS*) ... Apr. 62
Effect of X-irradiation on tissue hydration in the mouse. R. Rugh ... Jan. 28
Electric recorder for the gammagraph. M. Jacobs *et al* (*CS*) ... Jan. 60
Fast-neutron dose in a large tissue-equivalent phantom. T. Barr, G. Hurst ... Aug. 33
Fast-neutron dosimetry in a small tissue-equivalent phantom. W. Mills, G. Hurst ... Apr. 17
How biological effectiveness varies with X-ray energy. W. Moos ... May 46
K-9: a large $4\pi$ gamma-ray detector. M. Van Dilla *et al* ... Sept. 22
Labeling bovine and human albumin with iodine-131. R. Gilmore, Jr. *et al* (*CS*) ... Feb. 65
Procedure for digestion and radioassay of animal tissues. H. Cember *et al* (*CS*) ... Aug. 40
Radioactivity in animal thyroids from various areas. L. Van Middlesworth (*CS*) ... Sept. 56
Simplified method for determining thyroid function. J. Lewis (*CS*) ... June 59
The biological effectiveness of thermal neutrons on mice. J. Brennan *et al* ... Part 1 Feb. 48, Part 2 Apr. 31
Tumor-treatment reactor proposed (*N*) ... Feb. 78
**Meetings**
Atomic Industrial Forum session on new law thrashes out industrial problems (*N*) ... Oct. 9
First major U. S. international nuclear engineering conference attended by 1,200 (*N*) ... Aug. 60
Glasgow conference: international developments in nuclear physics. K. McNeill ... Sept. 46
Harwell to sponsor isotope meeting (*N*) ... Jan. 74
Institute of Radio Engineers plans nuclear conference (*N*) ... May 79
Institute of Radio Engineers to discuss role of electronics for reactors (*N*) ... Jan. 74
Low-level counting, key to advances in radiocarbon dating. J. Kulp ... Dec. 19
National Conference Board asks 17 foreign leaders to address meeting (*N*) ... Aug. 62
Plan '55 engineering meeting at Los Angeles (*N*) ... July 86; (corr.) Aug. 64
The international picture: progress in radiobiology. H. Patt ... Dec. 42
Trends in nuclear instrumentation. D. Taylor ... Oct. 12; (corr.) Dec. 68
**Metallurgy** (See also *Nuclear Reactors* and *Industrial Applications*)
Advantages of ultrasonic cleaning. M. Feldman ... Nov. 65
Lab for radiochemistry, metallurgy tests. R. Fisher, G. Winders ... Nov. 38
Low-radiation-level metallurgy cell. A. Lumbert ... Nov. 38
Operating the Hanford radiometallurgy laboratory. L. Turner ... Nov. 91
Remote metallographic equipment—I. Remote microscopy. S. Paine *et al* ... Nov. 56
Remote metallographic equipment—II. Sample preparation. F. Brown, S. Paine ... Nov. 58
The new radiometallurgy laboratory at Hanford ... Jan. 26
**Mining** (See *Raw Materials*)
**Multiplier Tubes** (See *Instruments, Detection*)

**National Laboratories and Facilities**
AEC favors locating accelerators at national laboratories (*N*) ... Feb. 75
AEC opens MTR to broader research use (*N*) ... July 86
Argonne contracts for EBWR components, design (*N*) ... Nov. 122
Argonne offers CP-5, EBR irradiation facilities (*N*) ... Nov. 126
Argonne offers temporary research jobs (*N*) ... Oct. 80
Argonne talks to utility, but not about selling power (*N*) ... Dec. 71
Brookhaven to build 25-Bev synchrotron (*N*) ... Feb. 75
Brookhaven tumor-treatment reactor proposed (*N*) ... Feb. 78
Mound research cut, Spoon River plant cancelled by AEC (*N*) ... Jan. 74
MTR irradiation facility bids asked by AEC (*N*) ... Nov. 124
NRTS to be site of aircraft-reactor test facilities (*N*) ... Mar. 74
ORNL plans $2.7-million research reactor (*N*) ... June 85
ORNL to get fission-product separations plant (*N*) ... Nov. 127
**National Research Council** (See *Organizations*)
**Neutrons**
Cold neutrons and lattice vibrations (*TA*) ... Dec. 62
Dose received by thermal-neutron-treated *drosophila melanogaster*. R. King (*CS*) ... Sept. 58
Fast-neutron dose in a large tissue-equivalent phantom. T. Barr, G. Hurst ... Aug. 33
Fast-neutron dosimetry in a small tissue-equivalent phantom. W. Mills, G. Hurst ... Apr. 17
Fast-neutron scattering: a correction for dosimetry. J. Cure, G. Hurst ... Aug. 36
Fast-neutron scintillation survey meter. B. Thompson ... May 43
How to use gas evolution for dosimetry of high gamma, neutron fluxes. E. Hart, S. Gordon ... Apr. 40
International neutron-source calibrations. D. Hughes ... Dec. 26
Multigroup methods for neutron diffusion problems. R. Ehrlich, H. Hurwitz, Jr. ... Feb. 23
Preparing neutron sources. J. Richmond ... Nov. 88
Pulsed neutron source (*TA*) ... Dec. 62
Recent developments in film monitoring of fast neutrons. J. Cheka ... June 40
The biological effectiveness of thermal neutrons on mice. J. Brennan *et al* ... Part 1 Feb. 48, Part 2 Apr. 31
**Nomograms**
Estimating radioactivity of irradiated uranium. R. Koontz, A. Jarrett ... June 26
Nomogram for nuclear reaction calculations. F. Farley (*CS*) ... Oct. 56
Nomograms for uranium burnup. F. Taraba (*NE*) ... Aug. 51
**Nuclear Physics** (See *Physics*)
**Nuclear Reactors, Components**
AEC, Navy expand program for leakproof pumps (*N*) ... Aug. 58
Discontinuous servo for control of power reactors. J. Harrer, J. DeShong, Jr. ... Jan. 44
General Electric forms unit to market atomic power equipment (*N*) ... Oct. 77
In-pile circulating loop is dismantled with this equipment. L. Howell *et al* ... Nov. 76
Steam generators for Britain's Calder Hall reactors (*NE*) ... Sept. 72
**Nuclear Reactors, Design, Construction**
Criticality of normal-water natural-uranium lattices. R. Persson ... Oct. 26
Failure and disassembly of Los Alamos fast reactor. E. Jurney ... Sept. 28
How thermal-flux distribution affects fast-fission factor in U cylinders. D. Hostetler *et al* (*NE*) ... July 76
How to use the fission-spectrum formula in reactor calculations. R. Murray *et al*, (*NE*) Sept. 64
In a heavy-water reactor: how do gamma rays affect reactivity? A. Lundby ... Aug. 25
Is this the first reactor design? (*NE*) ... Oct. 64
Kinetics of circulating reactors at low power. J. Fleck, Jr. ... Oct. 52
Multigroup methods for neutron diffusion problems. R. Ehrlich, H. Hurwitz, Jr. ... Feb. 23
Nonuniform fuel distributions in nuclear reactors. G. Goertzel, W. Loeb ... Sept. 42
Nuclear constants in reactor design. H. Bethe (*NE*) ... Sept. 70
Optimizing multiplication factors of heterogeneous reactors. I. Atkinson, R. Murray Apr. 50
Using a reactor simulator for design analysis. R. Spooner ... Apr. 36
**Nuclear Reactors, Experimental**
Development of the second French reactor. L. Kowarski ... 8
Homogeneous reactor stability established (*N*) ... Mar. 75
**Nuclear Reactors, Fuels**
A continuously separating breeder blanket using ThF$_4$. F. Miles *et al* ... July 26
Belgian uranium fabrication process (*NE*) ... Aug. 53
Compressive properties of uranium. N. Grossman, S. Priceman (*NE*) ... June 68
Equipment for processing reactor fuels. G. Winders *et al* ... Nov. 50
Estimating radioactivity of irradiated uranium. R. Koontz, A. Jarrett ... June 26
Fuel processing loops: how they are being developed. C. Raseman, J. Weisman ... July 20
Fused salts for removing fission products from U-Bi fuels. D. Bareis *et al* ... July 16
Handling irradiated fuel-specimen capsules. J. Kittel ... Nov. 60
Liquid-metal fuels and breeder blankets. R. Teitel *et al* ... July 14
Nomograms for uranium burnup. F. Taraba (*NE*) ... Aug. 51
Unitized handling of irradiated fuels. L. Sullivan ... Nov. 96
**Nuclear Reactors, Materials**
Components for sodium or NaK systems. W. Cottrell, L. Mann ... Dec. 22
Cost of lithium-7 reduced (*NE*) ... Oct. 67
$D_2O$ cost may be cut by geothermal steam (*N*) ... Jan. 74
$D_2O$: cost is key. J. Dunworth (*LE*) ... Feb. 73
Finding a container material for the uranium-bismuth fuel system. D. Gurinsky *et al* ... July 40
How radiation affects long-chain polymers. A. Charlesby ... June 18
NBS develops low-cross-section ceramic coatings (*NE*) ... Sept. 72
Testing electrical insulation for use in gamma-ray fields. C. Mannal ... June 49
Thermodynamic properties of liquid sodium. J. Lee (*NE*) ... Apr. 74
Radiation effects on reactor materials: metals. C. Sutton, D. Lesser ... Sept. 8
Radiation effects on reactor materials: nonmetals. V. Calkins ... Sept. 9
**Nuclear Reactors, Operation**
Evaluating reactor hazards from airborne fission products. R. Mesler, L. Widdoes ... Sept. 39
Kinetic behavior of a thermal heavy-water reactor. A. Lundby, N. Holt ... Jan. 22
Reactor power calibration. M. Schultz, J. Connor ... Feb. 8
Reactor runaway proves inherent safety (*N*) ... Aug. 6
Safeguard considerations for nuclear power plants. H. Hurwitz, Jr ... Mar. 57
Scintillation counting of natural uranium foils. R. Axtmann, J. Stutheit ... July 52
**Nuclear Reactors, Power**
AEC accepts Duquesne Light Co. plan for first U. S. central-station nuclear power plant (*N*) ... Apr. 78
AEC authorizes three new industrial reactor studies (*N*) ... May 78
AEC issues package reactor bid invitations to 33 companies (*N*) ... June 9, Aug. 62
AEC proposes industrial "reactor of the year" (*N*) ... Aug. 6
AEC will spend $242-million on 5-year power reactor program (*N*) ... May 72
Argonne contracts for EBWR components, design (*N*) ... Nov. 122
Argonne talks to utility, but not about selling power (*N*) ... Dec. 71
Army reactor branch formed by AEC (*N*) ... May 78
Australia includes reactor in 5-year development plan (*N*) ... Dec. 72
Big market developing rapidly (*N*) ... Nov. 127
Boiling reactors: direct steam generation for power. S. Untermyer ... July 43
Boiling reactor tests brighten safety picture (*N*) ... Apr. 78
British developments in atomic energy. Sir C. Hinton ... Jan. 6
British nuclear power station model (*PC*) ... Feb. 74
British operate fast breeder prototype (*PC*) ... Mar. 61
Canadian agency invests in nuclear-power study (*N*) ... Jan. 72
CISE is planning Italian power reactor (*N*) ... Aug. 62
Coal company studies nuclear power (*N*) ... Mar. 76
Colorado, coast groups want nuclear power (*N*) ... Sept. 80
Company wants New England plant (*N*) ... Oct. 77
Determining nuclear fuel requirements for large-scale industrial power. J. Lane (*NE*) ... Oct. 65
Dow and Detroit Edison splitting power group (*N*) ... Nov. 118
Dow-Detroit study gets $2.5-million for 1954 (*N*) ... Sept. 80
Dutch plan experimental nuclear power station (*N*) ... Jan. 73
Experimental boiling reactor (*PC*) ... May 74
Five northwest utilities to study nuclear power (*N*) ... July 86
Four new reactors proposed by AEC (*N*) ... Apr. 78
GE studying economics of nuclear power (*N*) ... Mar. 80
Growth potential of U. S. nuclear power industry J. Lane ... June 12; (corr.) Aug. 49
Heat exchange in LMF power reactor systems. O. Dwyer ... July 30
Heterogeneous power reactors. W. Zinn (*NE*) ... Dec. 54
House cuts AEC budget, approves power

reactor program (*N*) ..... May 75
How to test a nuclear power plant ..... Oct. 22
Industry needs capital guarantee (*N*) ..... Jan. 74
Joint Committee almost scrapped PWR project (*N*) ..... May 75
Liquid metal fuel reactor systems for power. C. Williams, F. Miles ..... July 11
Make it an honest bid (*Edit*) ..... Oct. 11
Murray suggests reactor for Japan, critical of U. S. program (*N*) ..... Oct. 77
New designs for power: fluidized- and liquid-fuel reactors with uranium oxides. J. Went, H. de Bruyn ..... Sept. 16
Nine groups offered to build, operate PWR (*N*) ..... June 83
Odlum submits power plan to Argentine government (*N*) ..... Nov. 126
Pennsylvania Power gets AEC approval for study (*N*) ..... Nov. 121
Power costs: nuclear vs coal (*NE*) ..... Aug. 50
PWR design calls for 900-million Btu/hr, 600 psia steam (*N*) ..... Mar. 75
PWR groundbreaking commemorated by program (*PC*) ..... Oct. 77
Reactor designs for commercial power. J. Menke (*NE*) ..... Jan. 66
Reactor exclusion-area formula revealed (*N*) .. Mar. 75; (*corr.*) Apr. 78
Rocky Mountain study group authorized (*N*) ..... Nov. 33
Russia trails U. S. in power-reactor work (*N*) ..... Aug. 60
Swiss plan reactor aimed at economic power (*N*) ..... Dec. 72
The course of reactor development (*Edit*) . Mar. 11
Same goal for all reactor types: competitive nuclear power (*NE*) ..... Sept. 66
Thirty eight million dollars needed for nuclear power group's 50-Mw reactor (*NE*) ..... Oct. 67
TVA nuclear power study approved by AEC (*N*) ..... Feb. 74
U. S. power reactor program—goal: economic power in 10 years ..... July 48; (corr.) Oct. 74
Vitro Corp. starts power-processing study (*N*) ..... Sept. 80
Why is Dow-Detroit Edison working on a fast breeder reactor for power? J. Grebe .. Feb. 13
World potential reported to Congress (*N*) . June 80

**Nuclear Reactors, Production**

Producing plutonium in U-$D_2O$ reactors. M. Bogaardt, M. Bustraan ..... Dec. 32

**Nuclear Reactors, Propulsion**

AEC, Navy reinstate nuclear carrier project (*N*) ..... Nov. 127
Aircraft reactor facilities to be built (*N*) .. Mar. 74
Nautilus awaits reactor ..... Feb. 22
Navy contracts for two more atom subs (*N*) .. Sept. 82
Nuclear-powered locomotive's economic feasibility questioned (*N*) ..... Mar. 78
Pratt & Whitney to step up A-plane work (*N*) ..... June 84
Ship reactors to be studied by Bethlehem Steel (*N*) ..... Nov. 34

**Nuclear Reactors, Research**

Armour Research Foundation to build reactor for industrial research (*N*) ..... Oct. 78
Battelle Institute plans $1.5-million expansion, including reactor (*N*) ..... Nov. 118
Design for a high-performance research reactor. J. Gill ..... Sept. 36; (corr.) Dec. 69
DIMPLE operates: first British heavy-water reactor (*N*) ..... Sept. 82
Energy released per fission in the bulk shielding reactor. J. L. Meem (*NE*) ..... May 62
Four uses of a zero-power reactor (*NE*) .. Oct. 66
Gamma-ray spectrum of the bulk shielding reactor. F. Maienschein, T. Love .... May 6
How to shield reactor beams. W. Stinson .. Sept. 50
Materials Testing Reactor. J. Huffman . Apr. 20
MTR facilities opened to broader research use (*N*) ..... July 87
Name McPherson Co. for ORR planning (*N*) ..... Oct. 79
North American gets 38 inquiries for research unit (*N*) ..... Sept. 82
NAA 100-watt water boiler delivered (*N*) . Feb. 78
ORNL plans $2.7-million research reactor (*N*) ..... June 85
Penn State to build reactor. W. Breazeale (*NE*) ..... Feb. 72
Plans for the new Argonne research reactor, CP-5. S. Untermyer ..... Jan. 12
Research reactors, cost and performance. M. Fox; (reply) J. Lane (*LE*) ..... July 82
Research reactors: what you need to know to build one (A NUCLEONICS special report) ..... Apr. 7
AEC policy ..... 8
What the contract with AEC calls for .. 9
What a reactor can be used for ..... 11
Status of reactor projects ..... 11
Technical and cost data for reactor design ..... 12
Reactors vs other nuclear machines .... 14
Secrecy ..... 15
Safety problems ..... 16
Swedish $D_2O$ reactor nearing completion (*PC*) ..... July 77
Tumor-treatment reactor proposed for BNL (*N*) ..... Feb. 78
S. U. aid helps Belgium build its first reactor; bargaining underway for more information (*N*) ..... Aug. 56
Water-boiler data: composition, decontamination of radioactive gas mixtures. H. Busey ..... May 9

**Optical Equipment** (See *Instruments, Detection, Photographic and Optical,* and *Shielding*)

**Organizations**

American Nuclear Society established Oct. 11 (*N*) ..... Nov. 119
American Nuclear Society is in preliminary organizing stage (*N*) ..... Sept. 79
Armour Research Foundation to build reactor for industrial research (*N*) ..... Oct. 78
Atomic Industrial Forum elects officials as membership rises to 171 (*N*) ..... Nov. 124
Atomic Industrial Forum plans film series (*N*) ..... Dec. 72
Atomic Industrial Forum plans two meetings, survey (*N*) ..... Sept. 79
Battelle Memorial Institute plans $1.5-million expansion (*N*) ..... Nov. 118
Engineers Joint Council forms committee in nuclear field (*N*) ..... Nov. 121
European Atomic Energy Society limits membership (*N*) ..... Sept. 82
European Atomic Society formed (*N*) ..... July 5
European Council for Nuclear Research progresses in plans for research center (*N*) Jan. 73
European Council for Nuclear Research to be headed by Bloch; laboratory being built (*N*) ..... July 86
National Planning Association gets $200,000 for nuclear study (*N*) ..... Sept. 80
National Planning Association study to have five phases (*N*) ..... Oct. 80
New England Governors Conference names Compton to head nuclear study (*N*) ... May 79
National Research Council radiobiology unit chairman is Zirkle (*N*) ..... Jan. 75
United Nations gets details of atom pool proposal, promise of fissionable material (*N*) ..... Dec. 70
United Nations hears U. S. report on international plans (*N*) ..... Oct. 76

**Patents**

Alpha-ray tachometer ..... Dec. 66
Government-owned inventions available for license ..... June 70, Nov. 112, Dec. 67
Measuring depth penetration of bullets in subsurface formations ..... Dec. 66
**Phosphors** (See *Instruments, Detection, Scintillation*)
**Physics**
Cold neutrons and lattice vibrations (*TA*) . Dec. 62
Glasgow conference: international developments in nuclear physics. K. McNeill Sept. 46
How thermal-flux distribution affects fast-fission factor in U cylinders. D. Hostetler *et al* (*NE*) ..... July 76
How to use the fission-spectrum formula in reactor calculations. R. Murray *et al* (*NE*) ..... Sept. 64
Isotope production: how to choose irradiation time. W. Lewis ..... Oct. 30
Kinetics of circulating reactors at low power. J. Fleck, Jr ..... Oct. 52
Nomogram for nuclear reaction calculations. F. Farley (*CS*) ..... Oct. 56
Planning progresses for European research center (*N*) ..... Jan. 73
**Plutonium**
How Britain produces fissionable materials .. Feb. 31
**Proportional Counters** (See *Instruments, Detection, GM and Proportional*)
**Prospecting** (See *Instruments* and *Raw Materials*)

**Radiation Effects** (See also *Biology* and *Medical Physics and Research*)
Does irradiation induce radioactivity in food? W. Meinke ..... Oct. 37
Failure and disassembly of Los Alamos fast reactor. E. Jurney ..... Sept. 28
How radiation affects long-chain polymers. A. Charlesby ..... June 18
Radiation-effect mechanisms (*TA*) ..... Oct. 68
Radiation effects on reactor materials: metals. C. Sutton, D. Leeser ..... Sept. 8
Radiation effects on reactor materials: nonmetals. V. Calkins ..... Sept. 9
Reactor power calibration. M. Schultz, J. Connor ..... Feb. 8
Storing radiation effects (*TA*) ..... Dec. 62
Testing electrical insulation for use in gamma-ray fields. C. Mannal ..... June 49
Water-boiler data: composition, decontamination of radioactive gas mixtures. H. Busey ..... May 9

**Radiobiology** (See *Biology*)
**Radiochemistry** (See *Chemistry*)
**Radiography** (See also *Autoradiography*)
Portable thulium X-ray unit. S. Untermyer *et al* ..... May 35 (corr.); July 82
Radiography as a hot-lab service. J. Austin, P. Richards ..... Nov. 78
**Radioisotopes** (See *Isotopes, Radioactive*)
**Radiology** (See *Medical Physics and Research*)
**Radium**
Estimating radium and uranium surface contamination. E. Barry *et al* (*CS*) ..... Feb. 59
Hot cells for radium processing. H. Feierstein ..... Nov. 40

**Raw Materials** (See also *Uranium*)
AEC is expanding feed materials facilities in $67-million three-year program (*N*) ... Nov. 118
Aerial prospecting with scintillation counters. G. Cowper ..... Mar. 29
Belgium and U. S. negotiate for ore supply (*N*) ..... Apr. 80
Colorado plateau mines expected to outdo Belgian Congo by '55 (*N*) ..... Mar. 75
Mining exceeds milling capacity (*N*) ..... Nov. 34
On the Colorado plateau: economics of producing uranium ..... Oct. 47
Unlimited future seen for uranium industry (*N*) ..... Mar. 81
Using autoradiography for quantitative study of U in ore. A. Bhatnagar, P. Ghosh (*CS*) ..... Apr. 58
U. S. ore supply held adequate by Pick (*N*) .. Apr. 79

**Remote Controls and Handling Apparatus** (See also *Nuclear Reactors, Components*)
Binocular periscope viewers. J. Holeman .... Nov. 64
Can-opening facilities. H. Bellarts ..... Nov. 80
Crane and fork lift for remote handling. D. Huszagh ..... Nov. 55
Electronically controlled manipulator. R. Goertz, W. Thompson ..... Nov. 46
Equipment for processing reactor fuels. G. Winders *et al* ..... Nov. 50
Equipment for remote chemical separations. L. Miller, E. Kinderman ..... Nov. 82
Failure and disassembly of Los Alamos fast reactor. E. Jurney ..... Sept. 28
Handling irradiated fuel-specimen capsules. J. Kittel ..... Nov. 60
Heavy-duty hydraulic manipulator. L. Howell, A. Tripp ..... Nov. 48
High-radiation-level analytical laboratory. E. Frederick ..... Nov. 36
Hot cell for testing MTR-irradiated specimens. M. Bartz, J. Burnham, Jr ..... Nov. 42
Hot cells for radium processing. H. Feierstein ..... Nov. 40
Hot Labs (A NUCLEONICS special report) .. Nov. 35
Design ..... Nov. 36
General-purpose manipulators ..... Nov. 45
Equipment ..... Nov. 50
Operation ..... Nov. 65
Administrative problems ..... Nov. 89
Hydraulically operated remote pipetter. K. Hammill ..... Nov. 52
In-pile circulating loop is dismantled with this equipment. L. Howell *et al* ..... Nov. 76
Interlocking plate for charging high temperature, pressure dissolver. F. Horn .... Nov. 75
Lab for radiochemistry, metallurgy tests. R. Fisher, G. Winders ..... Nov. 44
Large-scale automatic storage and sampling unit. T. Trent, Jr., J. Wallace ..... Nov. 70
Low-radiation-level metallurgy cell. A. Lumbert ..... Nov. 38
Mechanical master-slave manipulator. R. Goertz ..... Nov. 45
Mobile shield for cyclotron target removal. R. Blomgren, N. Bohlin ..... Nov. 62
Operating a manipulator cell. E. Pierce .Nov. 86
Operating busy hot cells. S. Dismuke . Nov. 89
Pliers for underwater gasket removal (*PC*) .. May 62
Remote liquid sampling: a completely automatic air-lift system. H. Duggan, J. Landry ..... Nov. 67
Remote metallographic equipment—I. Remote microscopy. S. Paine *et al* ..... Nov. 56
Remote metallographic equipment—II. Sample preparation. F. Brown, S. Paine . Nov. 58
Separating transplutonium isotopes from irradiated plutonium. W. Ruehle, Jr. . Nov. 84
Trailer and handling apparatus (*PC*) .... Jan. 74
Untized handling of irradiated fuels. L. Sullivan ..... Nov. 96

**Russia**
Trails U. S. in power reactor work (*N*) . Aug. 60

**Safety** (See also *Health Physics* and *Nuclear Reactors, Operation*)
Administrative problems in radiation protection. I. Tabershaw, S. Harris ..... Dec. 8
Boiling reactor tests brighten picture (*N*) . Apr. 78
Reactor runaway proves inherent safety (*N*) . Aug. 6

**Scalers** (See *Instruments, Electronic*)
**Scintillators** (See *Instruments, Detection, Scintillation*)
**Secrecy and Security** (See *Information,* and *Legislation*)
**Servomechanisms** (See *Remote Controls and Handling Apparatus* and *Nuclear Reactors, Controls*)
**Shielding**
Betatron X-rays: how much concrete for shielding? F. Kirn, R. Kennedy ..... June 44
Binocular periscope viewers. J. Holeman .... Nov. 64
Can-opening facilities. H. Bellarts ..... Nov. 80
Divided shield gives lighter A-plane (*N*) . June 85
Gamma-ray backscattering. G. Hine, R. McCall ..... Apr. 27
How to shield reactor beams. W. Stinson .... Sept. 50
Mobile shield for cyclotron target removal. R. Blomgren, N. Bohlin ..... Nov. 62
Radiological safety in cathode-ray sterilization. S. Levin ..... June 54
Simple efficient shield for well-type scintillation crystals. J. Irvine, Jr. (*CS*) ..... Oct. 62
Simple radiation-shielding doors. W. Wadey (*CS*) ..... May 54
**Sodium**
Activation analysis determines sodium content of aluminum alloys. R. Plumb, R. Silverman ..... Dec. 29
Thermodynamic properties of liquid sodium. J. Lee (*NE*) ..... Apr. 74
**Sources** (See *Isotopes*)
**Spectroscopy** (See also *Instruments*)
Experimental techniques in beta-ray spectroscopy—II. C. Cook ..... Feb. 43
Large scintillators, Cerenkov counters for high energies. A. Kantz, R. Hofstadter .... Mar. 36

Total-absorption X-ray spectrometry: application to betatron experiments. H. Koch, R. Foote ..... Mar. 51
**Standardization** (See *Measurements*)
**Sterilization** (See *Industrial Applications*, and *Biology*)
**Study Teams** (See *Nuclear Reactors, Power*, and *Industry*)
**Switzerland**
Belgium signs pact to trade data, uranium (*N*) ..... Oct. 76
Plan reactor aimed at economic power (*N*) Dec. 72
**Symposia** (See *Meetings*)
**Synchrotrons** (See *Accelerators*)

**Thallium**
Electroplating technique for thallium-204. A. Van Cleve, F. McDonough (*CS*) .... Dec. 53
**The Netherlands**
Plan experimental nuclear power station (*N*) ..... Jan. 73
**Thorium**
Determining mesothorium content of thorium nitrate. M. Allison *et al* ..... May 32
Photometric determination of uranium in thorium. L. Silverman, L. Moudy (*CS*) .... Sept. 60
**Thulium**
Higher-activity thulium. S. Untermyer (*LE*) ..... July 82
Portable thulium X-ray unit. S. Untermyer *et al* ..... May 35; (corr.) July 82
**Tracers** (See *Isotopes* and *Industrial Applications*)
**Tritium**
Biological applications of tritium. Roy C. Thompson ..... Sept. 31
First tritium production. J. Cloke (*LE*) .Nov. 117
**Tubes** (See *Instruments*)

**United States**
Reports to UN on international plans (*N*) Oct. 76
**Units** (See *Measurements*)
**Uranium** (See also *Raw Materials*, and *Nuclear Reactors, Fuels*)
Atomic archives: when uranium was "tub-alloy" ..... Oct. 20
Belgian uranium fabrication process (*NE*) .... Aug. 53
Compressive properties of uranium. N. Grossman, S. Priceman (*NE*) ..... June 68
Criticality of normal-water natural-uranium lattices. R. Persson ..... Oct. 26
Estimating radioactivity of irradiated uranium. R. Koontz, A. Jarrett ..... June 26
Estimating radium and uranium surface contamination. E. Barry *et al* (*CS*) ..... Feb. 59
How Britain produces fissionable materials .... Feb. 31
New designs for power: fluidized- and liquid-fuel reactors with uranium oxides. J. Went, H. de Bruyn ..... Sept. 16
Nomograms for uranium burnup. F. Taraba (*NE*) ..... Aug. 51
Photometric determination of uranium in thorium. L. Silverman, L. Moudy (*CS*) .... Sept. 60
Scintillation counting of natural uranium foils. R. Axtmann, J. Stutheit ..... July 52

**Waste disposal**
Crane and fork lift for remote handling. D. Huszagh ..... Nov. 55
Design and performance of a disposal plant for radioactive wastes. J. Leary *et al* ..... July 64
Machining radioactive materials. M. Simnad, P. Shewmon (*CS*) ..... July 69
Ocean disposal of radioactive waste (*NE*) .Dec. 54
Survey of radioactive-waste disposal practices. H. Miller *et al* (*NE*) ..... Jan. 68
Ultimate disposal of radioactive wastes. L. Hatch *et al* ..... Dec. 14
**Weapons**
Atomic archives: when uranium was "tub-alloy" ..... Oct. 20
Use of lithium in thermonuclear weapons postulated (*N*) ..... Feb. 78

**X-rays**
Betatron X-rays: how much concrete for shielding? F. Kirn, R. Kennedy ..... June 44
How biological effectiveness varies with X-ray energy. W. Moos ..... May 46
Portable thulium X-ray unit. S. Untermyer *et al* ..... May 35; (corr.) July 82
Total-absorption X-ray spectrometry: application to betatron experiments. H. Koch, R. Foote ..... Mar. 51

## AUTHOR INDEX

**Allen**, Augustine O., H. Schwarz. An economical water- and earth-shielded cobalt-60 gamma-ray source (*CS*) ..... Feb. 58
Allison, M., R. Moore, A. Richardson, D. Peterson, A. Voigt. Determining mesothorium content of thorium nitrate ... May 32
Anderson, E. C., M. Van Dilla, R. Schuch. K-9: a large 4π gamma-ray detector .. Sept. 22
Anderson, Ernest C., P. Hammer, C. Lehman, W. Wainwright. Simplified autoradiography exposure calculation ..... Jan. 19
Arp, R. H. More about PM sockets (*LE*) ... Sept. 77
Atherton, J. E., O. Kammerer, C. Klamut, M. Silberberg, B. Turovlin, J. Weeks, D. Gurinsky. Finding a container material for the uranium-bismuth fuel system ..... July 40
Atkinson, Ivan C., R. Murray. Optimizing multiplication factors of heterogeneous reactors ..... Apr. 50
Austin, J. C., P. Richards. Radiography as a hot-lab service ..... Nov. 78
Austin, Jere C. Mechanical shoe sander (*CS*) ..... Feb. 64
Axtmann, Robert C., J. Stutheit. Scintillation counting of natural uranium foils . July 52
**Baker**, J. C., G. Eichholz. Reliable scaling circuits for decade tubes ..... Apr. 44
Banks, H. O., Jr., R. Doering, T. Mills, L. Stang, Jr., W. Tucker. Production of iodine-132 ..... Aug. 22
Bareis, D. W., R. Wiswall, Jr., W. Winsche. Fused salts for removing fission products from U-Bi fuels ..... July 16
Barnes, D. W. H., J. Loutit. What is the recovery factor in spleen? (*LE*) ..... May 68
Barr, T. A., G. Hurst. Fast-neutron dose in a large tissue-equivalent phantom ..... Aug. 33
Barry, Eugene V., L. Solon, H. Blatz. Estimating radium and uranium surface contamination (*CS*) ..... Feb. 59
Barry, Eugene V., M. Eisenbud, H. Blatz. How important is surface contamination? ..... Aug. 12
Barthelemy, C. R. Wrong reactor, right company (*LE*) ..... Oct. 74
Bartz, M. H., J. Burnham, Jr. Hot cell for testing MTR-irradiated specimens ..... Nov. 42
Baskin, R., H. Demorest, S. Sandhaus. Gamma counting efficiency of two well-type NaI crystals (*CS*) ..... Aug. 46
Beckerley, J. G. Research reactors: secrecy .. Apr. 15
Bell, P. R. Amplifiers: an amplification (*LE*) ..... Dec. 68
Bellamy, W. D., E. Lawton. Problems in using high-voltage electrons for sterilization ..... Apr. 54
Bellarts, H. J. Can-opening facilities ... Nov. 80
Bethe, Hans A. Nuclear constants in reactor design (*NE*) ..... Sept. 70
Bhatnagar, A. S., P. Ghosh. Using autoradiography for quantitative study of U in ore (*CS*) ..... Apr. 58
Blatz, Hanson, E. Barry, L. Solon. Estimating radium and uranium surface contamination (*CS*) ..... Feb. 59
Blatz, Hanson, E. Barry, M. Eisenbud. How important is surface contamination? ... Aug. 12
Blatz, Hanson, J. McLaughlin, Jr. Costs and safe operation of modified irradiation unit (*CS*) ..... Mar. 63
Blatz, Hanson, L. Solon, J. McLaughlin. Interpreting background data from scintillation detectors ..... May 50
Blatz, Hanson. Tracers and scrap steel (*LE*) ..... Mar. 83
Blomgren, R. A., E. Rylander. Operating procedures of a hot lab for solid-state tests. ..... Nov. 98
Blomgren, R. A., N. Bohlin, L. Haaker, S. Paine, F. Brown. Remote metallographic equipment—1. Remote microscopy .... Nov. 56
Blomgren, R. A., N. Bohlin. Mobile shield for cyclotron target removal ..... Nov. 62
Bogaardt, M., M. Bustraan. Producing plutonium in U-D$_2$O reactors ..... Dec. 32
Bohlin, N. J. G., L. Haaker, S. Paine, F. Brown, R. Blomgren. Remote metallographic equipment—1. Remote microscopy. Nov. 56
Bohlin, N. J. G., R. Blomgren. Mobile shield for cyclotron target removal ..... Nov. 62
Borrman, Bernice B., M. Jacobs, A. Orvis. Electric recorder for the gammagraph (*CS*). Jan. 60
Brar, S. S., R. Clark. Optimum shape for cylindrical ionization chambers ..... Aug. 28
Breazeale, William M. Penn State to build reactor (*NE*) ..... Feb. 72
Brennan, James T., P. Harris, R. Carter, W. Langham. The biological effectiveness of thermal neutrons on mice ... Part 1 Feb. 48, Part 2 ..... Apr. 31
Brown, F. L., R. Blomgren, N. Bohlin, L. Haaker, S. Paine. Remote metallographic equipment—1. Remote microscopy ... Nov. 56
Brown, F. L., S. Paine. Remote metallographic equipment—11. Sample preparation ..... Nov. 58
Brownell, L. E., H. Gomberg, S. Gould, J. Nehemias. Economics of pork irradiation (*NE*) ..... Sept. 66
Brownell, L. E., H. Gomberg, S. Gould, J. Nehemias. Using cobalt-60 and fission products in pork irradiation experiments ..... May 38
Brownell, L. E., J. Nehemias, H. Gomberg. How should fission products be evaluated? (*LE*) ..... Mar. 82
Brucer, Marshall. Available cobalt-60 source for teletherapy (*CS*) ..... Aug. 45
Brucer, Marshall. Standardized cobalt-60 source capsule for teletherapy (*CS*) ... June 58
Bryner, J. S., R. Teitel, D. Gurinsky. Liquid-metal fuels and breeder blankets ..... July 14
Burnham, J. B., Jr., M. Bartz. Hot cell for testing MTR-irradiated specimens .... Nov. 42
Burris, L., J. Loeding, E. Petkus, G. Yasui, W. Rodger, L. Dillon. Fission-product kilocurie source: preparation, radiation intensity ..... May 14
Busey, Harold M. Water-boiler data: composition, decontamination of radioactive gas mixtures ..... May 9
Bushland, R. C., E. Darden, Jr., E. Maeyens. A gamma-ray source for sterilizing insects (*CS*) ..... Oct. 60
Bustraan, M., M. Bogaardt. Producing plutonium in U-D$_2$O reactors ..... Dec. 32
**Caldwell**, R. L., S. Turner. Gain variation of photomultiplier tubes (*CS*) ..... Dec. 47
Calkins, V. P. Radiation effects on reactor materials: nonmetals ..... Aug. 9
Callendine, George W., Jr., J. Morton. Device for loading cobalt-60 cartridges in tubing for cancer therapy (*CS*) ..... Apr. 62
Carter, Robert Emerson, W. Langham, J. Brennan, P. Harris. The biological effectiveness of thermal neutrons on mice ... Part 1 Feb. 48, Part 2 ..... Apr. 31
Cember, Herman, J. Watson, T. Grucci. Procedure for digestion and radioassay of animal tissues (*CS*) ..... Aug. 40
Charlesby, A. How radiation affects long-chain polymers ..... June 18
Cheka, Joseph S. Recent developments in film monitoring of fast neutrons ..... June 40
Cheka, J. S. Nuclear emulsion instability (*CS*) ..... Oct. 58
Christensen, E., A. Sparrow. Improved storage quality of potato tubers after exposure to cobalt-60 gammas ..... Aug. 16
Christopherson, E. W. Keeping costs down in an analytical hot lab ..... Nov. 94
Clark, R. A., R. Hammond, J. Leary. Design and performance of a disposal plant for radioactive wastes ..... July 64
Clark, R. G., M. Voss, K. Malaby, G. Winders, E. Dewell. Equipment for processing reactor fuels ..... Nov. 50
Clark, R. K., S. Brar. Optimum shape for cylindrical ionization chambers ..... Aug. 28
Cloke, J. B. First tritium production (*LE*) .. Nov. 117
Cohn, Charles Erwin. Compatible plastics for phosphors (*LE*) ..... July 82
Colding, Bertil. Interpreting wear studies (*LE*) ..... Jan. 59
Connally, R. E., M. Leboeuf, D. Miller. Gamma absorptiometry: a new tool for analytical chemistry ..... Aug. 18
Connor, J. C., M. Schultz. Reactor power calibration ..... Feb. 8
Cook, C. Sharp. Experimental techniques in beta-ray spectroscopy—1 ..... Feb. 43
Coplan, B. V., D. Smith. Remodeling a high-level chemistry cell ..... Nov. 92
Cormack, D. V., H. Johns, J. Till. Electron energy distributions produced by gamma-rays ..... Oct. 40
Cottrell, William B., L. Mann. Components for sodium or NaK systems ..... Dec. 22
Cowan, C. L., Jr., F. Reines, F. Harrison. Large-volume liquid scintillators: their applications ..... Mar. 44
Cowper, G. Aerial prospecting with scintillation counters ..... Mar. 29
Crean, L. E., P. Isaacs, G. Weiss, F. Fahnoe. How should fission products be evaluated? (*LE*) ..... Mar. 82
Crompton, Charles E., A. Rupp. Isotope comparison (*LE*) ..... Oct. 74
Cure, John W., G. Hurst. Fast-neutron scattering: a correction for dosimetry ..... Aug. 36
**Daane**, A. H., J. Powell, R. Hasterlik, S. Untermyer, F. Spedding. Portable thulium X-ray unit ..... May 35
Damon, Paul E., P. Winters. Resolution losses in counters and trigger circuits .. Dec. 36
Darden, E. B., Jr., E. Maeyens, R. Bushland. A gamma-ray source for sterilizing insects (*CS*) ..... Oct. 60
Davis, F. J., J. Harter, P. Reinhardt, C. Harris. Scintillation detector for carborne and airborne use (*CS*) ..... Dec. 46
de Bruyn, H., J. Went. New designs for power: fluidized- and liquid-fuel reactors with uranium oxides ..... Sept. 16
Demorest, H. L., J. Erickson. Automatic sample changer for well-type scintillation counter (*CS*) ..... July 68
Demorest, H. L., S. Sandhaus, R. Baskin. Gamma counting efficiency of two well-type NaI crystals (*CS*) ..... Aug. 46
DeShong, J. A., Jr., J. Harrer. Discontinuous servo for control of power reactors .... Jan. 44
Dewell, E. H., R. Clark, M. Voss, K. Malaby, G. Winders. Equipment for processing reactor fuels ..... Nov. 50
Dewey, Davis R., H. J. Nygard, M. Kelliher. Electron linear accelerators for processing .. Dec. 40
Dillon, I. G., L. Burris, J. Loeding, E. Petkus, G. Yasui, W. Rodger. Fission-product kilocurie source: preparation, radiation intensity ..... May 14
Dismuke, S. Operating busy hot cells . Nov. 89
Doering, R. F., T. Mills, L. Stang, Jr., W. Tucker, H. Banks, Jr. Production of iodine-132 ..... Aug. 22
Douglas, David L. Radioactive tracers for tagging special steel melts ..... Jan. 16
Dudley, Robert A. Photographic detection and dosimetry of beta rays ..... May 24
Duggan, H. G., J. Landry. Remote liquid sampling: a completely automatic air-lift system ..... Nov. 67
Dunworth, John V. D$_2$O: cost is key (*LE*) ... Feb. 73
Dwyer, Orrington, E. Heat exchange in LMF power reactor systems ..... July 30

**Ehrlich**, Margarete, W. McLaughlin. Film badge dosimetry: how much fading occurs?. Oct. 34
Ehrlich, R., H. Hurwitz, Jr. Multigroup methods for neutron diffusion problems. Feb. 23
Eichholz, G. G., J. Baker. Reliable scaling circuits for decade tubes. Apr. 44
Eisenbud, Merril, H. Blatz, E. Barry. How important is surface contamination?. Aug. 12
Erickson, J. H., H. Demorest. Automatic sample changer for well-type scintillation counter (*CS*). July 68
**Fahnoe**, F., L. Crean, P. Isaacs, G. Weiss. How should fission products be evaluated? (*LE*). Mar. 82
Fahnoe, F., W. Peterson, H. Miller. Survey of radioactive-waste disposal practices (*NE*). Jan. 68
Faires, R. A., J. Johnston, R. Millett. Advances in isotope techniques. Oct. 48
Farley, F. J. M. Nomogram for nuclear reaction calculations (*CS*). Oct. 56
Feierstein, H. E. Hot cells for radium processing. Nov. 40
Feldman, M. J. Advantages of ultrasonic cleaning. Nov. 65
Fisher, R. W., G. Winders. Lab for radiochemistry, metallurgy tests. Nov. 44
Fleck, Joseph A., Jr. Kinetics of circulating reactors at low power. Oct. 52
Foote, R. S., H. Koch. Total-absorption X-ray spectrometry: application to betatron experiments. Mar. 51
Ford, M. R., K. Morgan. Developments in internal dose determinations. June 32
Fox, Marvin. Research reactors: cost and performance (*LE*). July 82
Frederick, E. J. High-radiation-level analytical laboratory. Nov. 36
Freedman, Arthur J., C. Shultz, M. Kahn. Distillation of "carrier-free" iodine-131 activity (*CS*). July 72
**Gallaghar**, R. G., A. Hosey, H. Jones, O. Marsh. Automatic sampler, recorder (*CS*) Dec. 52
Gallas, William, B. Markow. Isotope capsule for pneumatically operated calibration facilities (*CS*). May 60
Geyer, S. V., J. Lehman, T. Sopp. Economical scintillation scanner (*CS*). Dec. 49
Ghosh, P. C., A. Bhatnagar. Using autoradiography for quantitative study of U in ore (*CS*). Apr. 58
Gifford, J. F., O. Olson. Two inexpensive decontamination units (*CS*). May 55
Gifford, John F. Hot-lab Fiberglas air filters Nov. 54
Gill, Joseph P. Design for a high-performance research reactor. Sept. 36
Gill, Joseph P. ORNL research reactor (*LE*). Dec. 69
Gilmore, Richard C., Jr., M. Robbins, A. Reid. Labeling bovine and human albumin with iodine-131 (*CS*). Feb. 65
Ginell, W. S., L. Hatch, J. Martin. Ultimate disposal of radioactive wastes. Dec. 14
Goertz, R. C. Mechanical master-slave manipulator. Nov. 45
Goertz, R. C., W. Thompson. Electronically controlled manipulator. Nov. 46
Goertzel, G., W. Loeb. Nonuniform fuel distributions in nuclear reactors. Sept. 42
Goldbith, S. A., B. Proctor. Rebuttal on sources (*LE*). Nov. 114
Goldbith, Samuel A., B. Proctor. Relative merits of cathode rays and gamma radiations Feb. 32
Gomberg, H. J., L. Brownell, J. Nehemias. How should fission products be evaluated? (*LE*). Mar. 82
Gomberg, H. J., S. Gould, J. Nehemias, L. Brownell. Economics of pork irradiation (*NE*). Sept. 66
Gomberg, H. J., S. Gould, J. Nehemias, L. Brownell. Using cobalt-60 and fission products in pork irradiation experiments. May 38
Gordon, Sheffield, E. Hart. How to use gas evolution for dosimetry of high gamma, neutron fluxes. Apr. 40
Gould, S. E., J. Nehemias, L. Brownell, H. Gomberg. Economics of pork irradiation (*NE*). Sept. 66
Gould, S. E., J. Nehemias, L. Brownell, H. Gomberg. Using cobalt-60 and fission products in pork irradiation experiments. May 38
Grebe, John J. Why is Dow-Detroit Edison working on a fast breeder reactor for power? Feb. 13
Grossman, Nicholas, S. Priceman. Compressive properties of uranium (*NE*). June 68
Grucci, Thomas B., H. Cember, J. Watson. Procedure for digestion and radioassay of animal tissues (*CS*). Aug. 40
Gurinsky, D. H., J. Atherton, O. Kammerer, C. Klamut, M. Silberberg, B. Turovlin, J. Weeks. Finding a container material for the uranium-bismuth fuel system. July 40
Gurinsky, D. H., J. Bryner, R. Teitel. Liquid-metal fuels and breeder blankets. July 14
**Haaker**, L. W., S. Paine, F. Brown, R. Blomgren, N. Bohlin. Remote metallographic equipment—1. Remote microscopy. Nov. 56
Hagee, G. R., L. Setter, J. Nader. Evaluating the performance of the internal counter. June 29
Haigh, C. P. Gamma-ray scintillation counter for weak radioactive solutions. Jan. 34
Hammer, Preston C., C. Lehman, W. Wainwright, E. Anderson. Simplified autoradiography exposure calculation. Jan. 19
Hammill, K. H. Hydraulically operated remote pipetter. Nov. 52
Hammond, R. P., J. Leary, R. Clark. Design and performance of a disposal plant for radioactive wastes. July 64
Harbottle, Garman. Activation of nuclear isomers by gamma rays (*CS*). Apr. 64
Harmer, David E., J. Martin, J. Lewis, J. Nehemias. Analysis of radiation fields of two gamma-radiation sources. Jan. 40
Harrer, J. M., J. DeShong, Jr. Discontinuous servo for control of power reactors. Jan. 44
Harris, C. F., F. Davis, J. Harter, P. Reinhardt. Scintillation detector for carborne and airborne use (*CS*). Dec. 46
Harris, Payne S., R. Carter, W. Langham, J. Brennan. The biological effectiveness of thermal neutrons on mice. Part 1 Feb. 48, Part 2. Apr. 31
Harris, Saul J., I. Tabershaw. Administrative problems in radiation protection. Dec. 8
Harrison, F. B., C. Cowan, Jr., F. Reines. Large-volume liquid scintillators: their applications. Mar. 44
Harrison, F. B. Slow component in decay of fluors. Mar. 24
Hart, Edwin J., S. Gordon. How to use gas evolution for dosimetry of high gamma, neutron fluxes. Apr. 40
Harter, J. A., P. Reinhardt, C. Harris, F. Davis. Scintillation detector for carborne and airborne use (*CS*). Dec. 46
Hassett, C. C., W. Summerson, F. Solomon. A biosynthesis of carbon-14-labeled glycogen (*CS*). Apr. 59
Hasterlik, Robert J., S. Untermyer, F. Spedding, A. Daane, J. Powell. Portable thulium X-ray unit. May 35
Hatch, L. P., F. Miles, R. Wiswall, Jr., R. Heus. A continuously separating breeder blanket using $ThF_4$. July 26
Hatch, L. P., J. Martin, W. Ginell. Ultimate disposal of radioactive wastes. Dec. 14
Hayes, F. N., R. Schuch, R. Hiebert. Photovoltaic scintillation detector for high dose rates. Feb. 16
Hebert, G. M., G. Parker. Decontamination characteristics of porcelain enamel. Nov. 72
Henley, Ernest J. Gamma-ray dosimetry with cellophane-dye systems (*CS*). Sept. 62
Henley, Ernest J. Radiations' relative merits (*LE*). Sept. 77
Heus, R. J., L. Hatch, F. Miles, R. Wiswall, Jr. A continuously separating breeder blanket using $ThF_4$. July 26
Heyd, J. W., W. Hood, J. Williamson, A. Rogers. Measuring the time of fall of a labeled plummet (*CS*). June 62
Hiebert, R. D., F. Hayes, R. Schuch. Photovoltaic scintillation detector for high dose rates. Feb. 16
Hine, Gerald J., R. McCall. Gamma-ray backscattering. Apr. 27
Hinton, Sir Christopher. British developments in atomic energy. Jan. 6
Hofstadter, Robert, A. Kantz. Large scintillators, Cerenkov counters for high energies. Mar. 36
Holeman, J. M. Binocular periscope viewers Nov. 64
Holt, N., A. Lundby. Kinetic behavior of a thermal heavy-water reactor. Jan. 22
Hood, W. L., J. Williamson, A. Rogers, J. Heyd. Measuring the time of fall of a labeled plummet (*CS*). June 62
Horn, F. L. Interlocking plate for charging high temperature, pressure dissolver. Nov. 75
Hosey, A. D., H. Jones, O. Marsh, R. Gallaghar. Automatic sampler, recorder (*CS*) Dec. 52
Hostetler, D. E., R. Murray, M. Keller. How to use the fission-spectrum formula in reactor calculations (*NE*). Sept. 64
Hostetler, Donald E., A. Menius, Jr., R. Murray. How thermal-flux distribution affects fast-fission factor in uranium cylinders (*NE*) July 76
Howell, L. N., A. Tripp, D. Jones. In-pile circulating loop is dismantled with this equipment. Nov. 76
Howell, L. N., A. Tripp. Heavy-duty hydraulic manipulator. Nov. 48
Huffman, John R. The materials testing reactor. Apr. 20
Hughes, D. J. International neutron-source calibrations. Dec. 26
Hursh, John B. Measurement of breath radon by charcoal adsorption (*CS*). Jan. 62
Hurst, G. S., J. Cure. Fast-neutron scattering: a correction for dosimetry. Aug. 36
Hurst, G. S., T. Barr. Fast-neutron dose in a large tissue-equivalent phantom. Aug. 33
Hurst, G. S., W. Mills. Fast-neutron dosimetry in a small tissue-equivalent phantom. Apr. 17
Hurwitz, H., Jr., R. Ehrlich. Multigroup methods for neutron diffusion problems. Feb. 23
Hurwitz, H., Jr. Safeguard considerations for nuclear power plants. Mar. 57
Huszagh, D. W. Crane and fork lift for remote handling. Nov. 55
**Irvine**, John W., Jr. Simple efficient shield for well-type scintillation crystals (*CS*). Oct. 62
Isaacs, P. J., G. Weiss, F. Fahnoe, L. Crean. How should fission products be evaluated? (*LE*). Mar. 82
Ittner, William B., III, M. Ter-Pogossian. Scintillation probe for determining relative beta-ray intensities(*CS*). May 56
**Jacobs**, Martin E., A. Orvis, B. Borrman. Electric recorder for the gammagraph (*CS*). Jan. 60
Jarrett, A. A., R. Koontz. Estimating radioactivity of irradiated uranium. June 26
Jeffries, Zay. Words of prophecy. July 8
Johns, H. E., G. Mauchel. Automatic isodose plotter (*CS*). Dec. 50
Johns, H. E., J. Till, D. Cormack. Electron energy distributions produced by gamma-rays. Oct. 40
Johnson, Thomas H. Research reactors: AEC policy. Apr. 8
Johnston, J. E., R. Millett, R. Faires. Advances in isotope techniques. Oct. 48
Jones, D. T., L. Howell, A. Tripp. In-pile circulating loop is dismantled with this equipment. Nov. 76
Jones, H. H., O. Marsh, R. Gallaghar, A. Hosey. Automatic sampler, recorder (*CS*). Dec. 52
Jones, R. T. Hot labs: a market for industry Nov. 74
Jurney, E. T. Failure and disassembly of Los Alamos fast reactor. Sept. 28
**Kahn**, Milton, A. Freedman, C. Shultz. Distillation of "carrier-free" iodine-131 activity (*CS*). July 72
Kammerer, O. F., C. Klamut, M. Silberberg, B. Turovlin, J. Weeks, D. Gurinsky, J. Atherton. Finding a container material for the uranium-bismuth fuel system. July 40
Kantz, Asher, R. Hofstadter. Large scintillators, Cerenkov counters for high energies. Mar. 36
Keller, M. R., D. Hostetler, R. Murray. How to use the fission-spectrum formula in reactor calculations (*NE*). Sept. 64
Kelley, John P., A. Lucas, E. Trout. Cobalt-60 unit for checking thimble chambers (*CS*) Oct. 58
Kelliher, Maurice G., D. Dewey, II, J. Nygard. Electron linear accelerators for processing. Dec. 40
Kennedy, Robert J., F. Kirn. Betatron X-rays: how much concrete for shielding?. June 44
Kinderman, E. M., L. Miller. Equipment for remote chemical separations. Nov. 82
King, R. C. Dose received by thermal neutron treated *drosophila melanogaster* (*CS*). Sept. 58
Kirn, Frederick S., R. Kennedy. Betatron X-rays: how much concrete for shielding?. June 44
Kittel, J. H. Handling irradiated fuel-specimen capsules. Nov. 60
Klamut, C., M. Silberberg, B. Turovlin, J. Weeks, D. Gurinsky, J. Atherton, O. Kammerer. Finding a container material for the uranium-bismuth fuel system. July 40
Koch, H. W., R. Foote. Total-absorption X-ray spectrometry: application to betatron experiments. Mar. 51
Koontz, R. L., A. Jarrett. Estimating radioactivity of irradiated uranium. June 26
Kowarski, L. Development of the second French reactor. Aug. 8
Kulp, Laurence J. Low-level counting, key to advances in radiocarbon dating. Dec. 19
**Lambert**, J. M., J. Roecker, J. Pescatore, G. Segura, Jr., S. Stigman. How to prepare and use radioactive soils. Feb. 40
Landry, J. W., H. Duggan. Remote liquid sampling: a completely automatic air-lift system. Nov. 67
Lane, James A. Determining nuclear fuel requirements for large-scale industrial power (*NE*). Oct. 65
Lane, James A. Growth potential of U. S. nuclear power industry. June 12
Lane, J. A. Research reactors: cost and performance (*LE*). July 84
Lane, J. A. Research reactors: technical and cost data for reactor design. Apr. 12
Langham, Wright H., J. Brennan, P. Harris, R. Carter. The biological effectiveness of thermal neutrons on mice. Part 1 Feb. 48, Part 2. Apr. 31
Laug, E. P., A. Lehman. Evaluating the safety of radiation-sterilized foods. Jan. 52
Lawton, E. J., W. Bellamy. Problems in using high-voltage electrons for sterilization Apr. 54
Leary, J. A., R. Clark, R. Hammond. Design and performance of a disposal plant for radioactive wastes. July 64
Lebocuf, M. B., D. Miller, R. Connally. Gamma absorptiometry: a new tool for analytical chemistry. Aug. 18
Lee, John F. Thermodynamic properties of liquid sodium (*NE*). Apr. 74
Leeser, D. O., C. Sutton. Radiation effects on reactor materials: metals. Sept. 8
Lehman, A. J., E. Laug. Evaluating the safety of radiation-sterilized foods. Jan. 52
Lehman, Charles A., W. Wainwright, E. Anderson, P. Hammer. Simplified autoradiography exposure calculation. Jan. 19
Lehman, J. S., T. Sopp, S. Geyer. Economical scintillation scanner (*CS*). Dec. 49
Levin, Samuel. Radiological safety in cathode-ray sterilization. June 54
LeVine, H. D. Go, no-go radiation detector (*CS*). Jan. 62
LeVine, H. D. Logarithmic d-c ratemeters for scintillation counters. Feb. 36
Lewis, John G., J. Nehemias, D. Harmer, J. Martin. Analysis of radiation fields of two gamma-radiation sources. Jan. 40
Lewis, J. W. Simplified method for determining thyroid function with radioiodine (*CS*). June 59
Lewis, Wm. Bradley. Isotope production: how to choose irradiation time. Oct. 30

## INDEX—(*Continued*)

**Vol. 12, January–December, 1954**


Linden, Bernard R. New photomultipliers and operating data ..... Mar. 20
Lipner, Harry J., J. Weisburger. Which iodine-131 counting system is best for laboratory use? ..... May 21
Loeb, William A., G. Goertzel. Nonuniform fuel distributions in nuclear reactors ... Sept. 42
Loeding, J. W., E. Petkus, G. Yasui, W. Rodger, I. Dillon, L. Burris. Fission-product kilocurie source: preparation, radiation intensity ..... May 14
Loutit, J. F., D. Barnes. What is the recovery factor in spleen? (*LE*) ..... May 68
Love, Temple, F. Maienschein. Gamma-ray spectrum of the bulk shielding reactor .. May 6
Lucas, Arthur C., E. Trout, J. Kelley. Cobalt-60 unit for checking thimble chambers (*CS*) ..... Oct. 58
Lumbert, A. R. Low-radiation-level metallurgy cell ..... Nov. 38
Lundby, A., N. Holt. Kinetic behavior of a thermal heavy-water reactor ..... Jan. 22
Lundby, Arne. In a heavy-water reactor: how do gamma rays affect reactivity? ..... Aug. 25
**McCall**, Richard C., G. Hine. Gamma-ray backscattering ..... Apr. 27
McCullough, C. Rogers. Research reactors: safety problems ..... Apr. 16
McDonough, F. D., A. Van Cleve. Electroplating technique for thallium-204 (*CS*) .. Dec. 53
McLaughlin, James E., Jr., H. Blatz. Costs and safe operation of modified irradiation unit (*CS*) ..... Mar. 63
McLaughlin, James E. Jr., H. Blatz, L. Solon. Interpreting background data from scintillation detectors ..... May 50
McLaughlin, William L., M. Ehrlich. Film badge dosimetry: how much fading occurs? ..... Oct. 34
McNeill, K. G. Glasgow conference: international developments in nuclear physics ... Sept. 46
**Maeyens**, E., R. Bushland, E. Darden, Jr. A gamma-ray source for sterilizing insects (*CS*) ..... Oct. 60
Magill, R. J. Simplified film processing for radiation dosimetry (*CS*) ..... Aug. 43
Maienschein, Fred, T. Love. Gamma-ray spectrum of the bulk shielding reactor .. May 6
Malaby, K. L., G. Winders, E. Dewell, R. Clark, M. Voss. Equipment for processing reactor fuels ..... Nov. 50
Mann, Leland A., W. Cottrell. Components for sodium or NaK systems ..... Dec. 22
Mannal, Clifford. Testing electrical insulation for use in gamma-ray fields ..... June 49
Markow, Basil, W. Gallas. Isotope capsule for pneumatically operated calibration facilities (*CS*) ..... May 60
Marsh, O. C., R. Gallaghar, A. Hosey, H. Jones. Automatic sampler, recorder (*CS*) ..... Dec. 52
Martin, J. J., W. Ginell, L. Hatch. Ultimate disposal of radioactive wastes ..... Dec. 14
Martin, Joseph J., J. Lewis, J. Nehemias, D. Harmer. Analysis of radiation fields of two gamma-radiation sources ..... Jan. 40
Mauchel, G. A., H. Johns. Automatic isodose plotter (*CS*) ..... Dec. 50
May, Harold A. Simple, general-purpose pulse generator (*CS*) ..... July 70
Mayr, Giovanna. Activation analysis with nuclear emulsions (*CS*) ..... May 58
Meem, J. L. Energy released per fission in the bulk shielding reactor (*NE*) ..... May 62
Meinke, W. Wayne. Does irradiation induce radioactivity in food? ..... Oct. 37
Menius, A. C., Jr., R. Murray, D. Hostetler. How thermal-flux distribution affects fast-fission factor in uranium cylinders (*NE*) ..... July 76
Menke, J. R. Reactor designs for commercial power (*NE*) ..... Jan. 66
Mesler, Russell B., L. Widdoes. Evaluating reactor hazards from airborne fission products ..... Sept. 39
Miles, F. T., C. Williams. Liquid metal fuel reactor systems for power ..... July 11
Miles, F. T., R. Wiswall, Jr., R. Heus, L. Hatch. A continuously separating breeder blanket using $ThF_4$ ..... July 26
Miller, D. G., R. Connally, M. Leboeuf. Gamma absorptiometry: a new tool for analytical chemistry ..... Aug. 18
Miller, H. S., F. Fahnoe, W. Peterson. Survey of radioactive-waste disposal practices (*NE*) ..... Jan. 68
Miller, L. F., E. Kinderman. Equipment for remote chemical separations ..... Nov. 82
Millett, Rosaleen J., R. Faires, J. Johnston. Advances in isotope techniques ..... Oct. 48
Mills, T. H., L. Stang, Jr., W. Tucker, H. Banks, Jr., R. Doering. Production of iodine-132 ..... Aug. 22
Mills, W. A., G. Hurst. Fast-neutron dosimetry in a small tissue-equivalent phantom ... Apr. 17
Moenich, John S., R. Swank. Potting photomultiplier tubes (*CS*) ..... Aug. 41
Moore, R. W., A. Richardson, D. Peterson, A. Voigt, M. Allison. Determining mesothorium content of thorium nitrate .... May 32
Moos, Walter S. How biological effectiveness varies with X-ray energy ..... May 46
Morgan, K. Z., M. Ford. Developments in internal dose determinations ..... June 32
Morken, Donald. A source of sockets (*LE*) .. July 82
Morton, Joseph L., G. Callendine, Jr. Device for loading cobalt-60 cartridges in tubing for cancer therapy (*CS*) ..... Apr. 62
Moudy, Lavada, L. Silverman. Photometric determination of uranium in thorium (*CS*) .. Sept. 60
Murray, Raymond L., D. Hostetler, A. Menius, Jr. How thermal-flux distribution affects fast-fission factor in uranium cylinders (*NE*) ..... July 76
Murray, Raymond L., I. Atkinson. Optimizing multiplication factors of heterogeneous reactors ..... Apr. 50
Murray, R. L., M. Keller, D. Hostetler. How to use the fission-spectrum formula in reactor calculations (*NE*) ..... Sept. 64
**Nader**, J. S., G. Hagee, L. Setter. Evaluating the performance of the internal counter. June 29
Nehemias, John V., D. Harmer, J. Martin, J. Lewis. Analysis of radiation fields of two gamma-radiation sources ..... Jan. 40
Nehemias, J. V., H. Gomberg, L. Brownell. How should fission products be evaluated? (*LE*) ..... Mar. 82
Nehemias, J. V., L. Brownell, H. Gomberg, S. Gould. Economics of pork irradiation (*NE*) ..... Sept. 66
Nehemias, J. V., L. Brownell, H. Gomberg, S. Gould. Using cobalt-60 and fission products in pork irradiation experiments .... May 38
Nygard, John C., M. Kelliher, D. Dewey, H. Electron linear accelerators for processing .. Dec. 40
**Olson**, O. L., J. Gifford. Two inexpensive decontamination units (*CS*) ..... May 55
Orvis, Alan L., B. Borrman, M. Jacoba. Electric recorder for the gammagraph (*CS*) .. Jan. 60
**Paine**, S. H., F. Brown. Remote metallographic equipment—II. Sample preparation ..... Nov. 58
Paine, S. H., F. Brown, R. Blomgren, N. Bohlin, L. Haaker. Remote metallographic equipment—I. Remote microscopy ..... Nov. 56
Parker, G. W., G. Hebert. Decontamination characteristics of porcelain enamel .... Nov. 72
Patt, Harvey M. The international picture: progress in radiobiology ..... Dec. 42
Persson, Rolf. Criticality of normal-water natural-uranium lattice ..... Oct. 26
Pescatore, J. J., G. Segura, Jr., S. Stigman, J. Lambert, J. Roecker. How to prepare and use radioactive soils ..... Feb. 40
Peterson, D. T., A. Voigt, M. Allison, R. Moore, A. Richardson. Determining mesothorium content of thorium nitrate ..... May 32
Peterson, W. R., H. Miller, F. Fahnoe. Survey of radioactive-waste disposal practices (*NE*) ..... Jan. 68
Petkus, E. J., G. Yasui, W. Rodger, I. Dillon, L. Burris, J. Loeding. Fission-product kilocurie source: preparation, radiation intensity ..... May 14
Pierce, E. E. Operating a manipulator cell .. Nov. 86
Plumb, Robert C., R. Silverman. Activation analysis determines sodium content of aluminum alloys ..... Dec. 29
Powell, J. E., R. Hasterlik, S. Untermyer, F. Spedding, A. Daane. Portable thulium X-ray unit ..... May 35
Preuss, L. E. Autoradiographic studies of surface detail with chromium-51 ..... Aug. 30
Priceman, Seymour, N. Grossman. Compressive properties of uranium (*NE*) ..... June 68
Proctor, Bernard E., S. Goldblith. Relative merits of cathode rays and gamma radiations ..... Feb. 32
Proctor, B. E., S. Goldblith. Rebuttal on sources (*LE*) ..... Nov. 114
**Rand**, A. C., G. Selvin, L. Stang, Jr., G. Strickland. Design and performance of a portable irradiation unit (*CS*) ..... Mar. 62
Raseman, C., J. Weisman. Fuel processing loops: how they are being developed ... July 20
Rausa, Gerald J. Gamma dose rate from a Po-Be source (*CS*) ..... Feb. 62
Reid, Allen F., R. Gilmore, Jr., M. Robbins. Labeling bovine and human albumin with iodine-131 (*CS*) ..... Feb. 65
Reines, F., F. Harrison, C. Cowan, Jr. Large-volume liquid scintillators: their applications ..... Mar. 44
Reinhardt, P. W., C. Harris, F. Davis, J. Harter. Scintillation detector for carborne and airborne use (*CS*) ..... Dec. 46
Richards, P., J. Austin. Radiography as a hot-lab service ..... Nov. 78
Richardson, A. E., D. Peterson, A. Voigt, M. Allison, R. Moore. Determining mesothorium content of thorium nitrate .... May 32
Richmond, John L. Preparing neutron sources ..... Nov. 88
Riedel, Oswald. Statistical purity in nuclear counting (*CS*) ..... June 64
Robbins, Margaret C., A. Reid, R. Gilmore, Jr. Labeling bovine and human albumin with iodine-131 (*CS*) ..... Feb. 65
Rodger, W. A., I. Dillon, L. Burris, J. Loeding, E. Petkus, G. Yasui. Fission-product kilocurie source: preparation, radiation intensity ..... May 41
Roecker, J. H., J. Pescatore, G. Segura, Jr., S. Stigman, J. Lambert. How to prepare and use radioactive soils ..... Feb. 40
Rogers, A. J., J. Heyd, W. Hood, J. Williamson. Measuring the time of fall of a labeled plummet (*CS*) ..... June 62
Roth, Herman M. Research reactors: what the contract with AEC calls for ..... Apr. 9
Ruehle, William, Jr. Separating transplutonium isotopes from irradiated plutonium .. Nov. 84
Rugh, Roberts. Effect of X-irradiation on tissue hydration in the mouse ..... Jan. 28
Rupp, A. F., C. Crompton. Isotope comparison (*LE*) ..... Oct. 74
Rylander, E. W., R. Blomgren. Operating procedures of a hot lab for solid-state tests .. Nov. 98

**Sandhaus**, S., R. Baskin, H. Demorest. Gamma counting efficiency of two well-type NaI crystals (*CS*) ..... Aug. 46
Schuch, R. L., E. Anderson, M. Van Dilla. K-9: a large $4\pi$ gamma-ray detector .. Sept. 22
Schuch, R. L., R. Hiebert, F. Hayes. Photovoltaic scintillation detector for high dose rates ..... Feb. 16
Schultz, M. A., J. Connor. Reactor power calibration ..... Feb. 8
Schwarz, Harold A., A. Allen. An economical water- and earth-shielded cobalt-60 gamma-ray source (*CS*) ..... Feb. 58
Schwebel, A., H. Seliger. Standardization of beta-emitting nuclides ..... July 54
Segura, G., Jr., S. Stigman, J. Lambert, J. Roecker, J. Pescatore. How to prepare and use radioactive soils ..... Feb. 40
Seliger, H. H., A. Schwebel. Standardization of beta-emitting nuclides ..... July 54
Selvin, G., L. Stang, Jr., G. Strickland, A. Rand. Design and performance of a portable irradiation unit (*CS*) ..... Mar. 62
Setter, L. R., J. Nader, G. Hagee. Evaluating the performance of the internal counter ... June 29
Sheppard, C. W. An "editorial transfer" (*LE*) ..... Dec. 68
Shewmon, P., M. Simnad. Machining radioactive materials (*CS*) ..... July 69
Shultz, C. G., M. Kahn, A. Freedman. Distillation of "carrier-free" iodine-131 activity (*CS*) ..... July 72
Silberberg, M., B. Turovlin, J. Weeks, D. Gurinsky, J. Atherton, O. Kammerer, C. Klamut. Finding a container material for the uranium-bismuth fuel system ..... July 40
Silverman, Louis, L. Moudy. Photometric determination of uranium in thorium (*CS*) .. Sept. 60
Silverman, Ralph H., R. Plumb. Activation analysis determines sodium content of aluminum alloys ..... Dec. 29
Simnad, M., P. Shewmon. Machining radioactive materials (*CS*) ..... July 69
Smith, D. J., B. Coplan. Remodeling a high-level chemistry cell ..... Nov. 92
Solomon, F., C. Hassett, W. Summerson. A biosynthesis of carbon-14 labeled glycogen (*CS*) ..... Apr. 59
Solon, Leonard R., H. Blatz, E. Barry. Estimating radium and uranium surface contamination (*CS*) ..... Feb. 59
Solon, Leonard R., J. McLaughlin, H. Blatz. Interpreting background data from scintillation detectors ..... May 50
Sopp, T. E., S. Geyer, J. Lehman. Economical scintillation scanner (*CS*) ..... Dec. 49
Sparrow, A. H., E. Christensen. Improved storage quality of potato tubers after exposure to cobalt-60 gammas ..... Aug. 16
Spedding, F. H., A. Daane, J. Powell, R. Hasterlik, S. Untermyer. Portable thulium X-ray unit ..... May 35
Spooner, R. B. Using a reactor simulator for design analysis ..... Apr. 36
Stang, L. G. Jr., G. Strickland, A. Rand, G. Selvin. Design and performance of a portable irradiation unit (*CS*) ..... Mar. 62
Stang, L. G., Jr., W. Tucker, H. Banks, Jr., R. Doering, T. Mills. Production of iodine-132 ..... Aug. 22
Stigman, S., J. Lambert, J. Roecker, J. Pescatore, G. Segura, Jr. How to prepare and use radioactive soils ..... Feb. 40
Stinson, W. P. How to shield reactor beams .. Sept. 50
Strickland, G., A. Rand, G. Selvin, L. Stang, Jr. Design and performance of a portable irradiation unit (*CS*) ..... Mar. 62
Stuthert, James S., R. Axtmann. Scintillation counting of natural uranium foils ..... July 52
Sullivan, L. O. Unitized handling of irradiated fuels ..... Nov. 96
Summerson, W. H., F. Solomon, C. Hassett. A biosynthesis of carbon-14-labeled glycogen (*CS*) ..... Apr. 59
Susskind, H. Low-cost plastic sealer ... Nov. 61
Sutton, C. R., D. Lesser. Radiation effects on reactor materials: metals ..... Sept. 8
Swank, Robert K., J. Moenich. Potting photomultiplier tubes (*CS*) ..... Aug. 41
Swank, Robert K. Recent advances in theory of scintillation phosphors ..... Mar. 14
**Tabern**, D. L. Radiogold administration (*CS*) ..... Sept. 57
Tabershaw, Irving S., S. Harris. Administrative problems in radiation protection ... Dec. 8
Taraba, F. R. Nomograms for uranium burnup (*NE*) ..... Aug. 51
Taylor, Denis. Trends in nuclear instrumentation ..... Oct. 12
Teitel, R. J., D. Gurinsky, J. Bryner. Liquid-metal fuels and breeder blankets ..... July 14
Terentiuk, F. Solid-sample beta determina-

tions with a liquid scintillation counter (*CS*) Jan. 61
Ter-Pogossian, Michel, W. Ittner, III. Scintillation probe for determining relative beta-ray intensities (*CS*) ..... May 56
Thompson, B. W. Fast-neutron scintillation survey meter ..... May 43
Thompson, Roy C. Biological applications of tritium ..... Sept. 31
Thompson, W. M., R. Goertz. Electronically controlled manipulator ..... Nov. 46
Till, J. E., D. Cormack, H. Johns. Electron energy distributions produced by gamma-rays ..... Oct. 40
Trent, T. L., Jr., J. Wallace. Large-scale automatic storage and sampling unit ..... Nov. 70
Tripp, A. M., D. Jones, L. Howell. In-pile circulating loop is dismantled with this equipment ..... Nov. 76
Tripp, A. M., L. Howell. Heavy-duty hydraulic manipulator ..... Nov. 48
Trout, E. Dale, J. Kelly, A. Lucas. Cobalt-60 unit for checking thimble chambers (*CS*) ... Oct. 58
Tucker, W. D., H. Banks, Jr., R. Doering, T. Mills, L. Stang, Jr. Production of iodine-132 ..... Aug. 22
Turner, L. D. Operating the Hanford radiometallurgy laboratory ..... Nov. 91
Turner, S. E., R. Caldwell. Gain variation of photomultiplier tubes (*CS*) ..... Dec. 47
Turovlin, B., J. Weeks, D. Gurinsky, J. Atherton, O. Kammerer, C. Klamut, M. Silberberg. Finding a container material for the uranium-bismuth fuel system ..... July 40
**Untermyer**, S. Plans for the new Argonne research reactor, CP-5 ..... Jan. 12
Untermyer, Samuel. Higher-activity thulium (*LE*) ..... July 82
Untermyer, Samuel A. Boiling reactors: direct steam generation for power ..... July 43
Untermyer, S., F. Spedding, A. Daane, J. Powell, R. Hasterlik. Portable thulium X-ray unit ..... May 35
**Van Cleve**, A., F. McDonough. Electroplating technique for thallium-204 (*CS*) ..... Dec. 53
Van Dilla, M. A., R. Schuch, E. Anderson. K-9: a large 4π gamma-ray detector ..... Sept. 22
Van Middlesworth, Lester. Radioactivity in animal thyroids from various areas (*CS*) ... Sept. 56
Voigt, A. F., M. Allison, R. Moore, A. Richardson, D. Peterson. Determining mesothorium content of thorium nitrate ..... May 32
Voss, M. D., K. Malaby, G. Winders, E. Dewell, R. Clark. Equipment for processing reactor fuels ..... Nov. 50
**Wadey**, W. G. Simple radiation shielding doors (*CS*) ..... May 54
Wainwright, William W., E. Anderson, P. Hammer, C. Lehman. Simplified autoradiography exposure calculation ..... Jan. 19
Wallace, J. J., T. Trent, Jr. Large-scale automatic storage and sampling unit ..... Nov. 70
Watson, Joseph A., T. Grucci, H. Cember. Procedure for digestion and radioassay of animal tissues (*CS*) ..... Aug. 40
Weeks, J., D. Gurinsky, J. Atherton, O. Kammerer, C. Klamut, M. Silberberg, B. Turovlin. Finding a container material for the uranium-bismuth fuel system ..... July 40
Weinberg, Alvin M. Weinberg says we need: "a scholarly tradition in nuclear development" ..... Sept. 20
Weisburger, John H., H. Lipner. Which iodine-131 counting system is best for laboratory use? ..... May 21
Weisman, J., C. Raseman. Fuel processing loops: how they are being developed ..... July 20
Weiss, G. J., F. Fahnoe, L. Crean, P. Isaacs. How should fission products be evaluated? (*LE*) ..... Mar. 82
Went, J. J., H. de Bruyn. New designs for power: fluidized- and liquid-fuel reactors with uranium oxides ..... Sept. 16
Whyte, G. N. Density effect in gamma-ray measurements ..... Feb. 18
Widdoes, Lawrence C., R. Mesler. Evaluating reactor hazards from airborne fission products ..... Sept. 39
Williams, C., F. Miles. Liquid metal fuel reactor systems for power ..... July 11
Williamson, J. A., A. Rogers, J. Heyd, W. Hood. Measuring the time of fall of a labeled plummet (*CS*) ..... June 62
Winders, G. R., E. Dewell, R. Clark, M. Voss, K. Malaby. Equipment for processing reactor fuels ..... Nov. 50
Winders, G. R., R. Fisher. Lab for radiochemistry, metallurgy tests ..... Nov. 44
Winsche, W. E., D. Bareis, R. Wiswall, Jr. Fused salts for removing fission products from U-Bi fuels ..... July 16
Winters, Paul N., P. Damon. Resolution losses in counters and trigger circuits ..... Dec. 36
Wiswall, R. H., Jr., R. Heus, L. Hatch, F. Miles. A continuously separating breeder blanket using $ThF_4$ ..... July 26
Wiswall, R. H., Jr., W. Winsche, D. Bareis. Fused salts for removing fission products from U-Bi fuels ..... July 16
**Yasui**, G., W. Rodger, I. Dillon, L. Burris, J. Loeding, E. Petkus. Fission-product kilocurie source: preparation, radiation intensity ..... May 14
**Zinn**, W. H. Heterogeneous power reactors (*NE*) ..... Dec. 54
Zumwalt, L. R. The best performance from beta gages ..... Jan. 55


# Basic Decade Scaler

**A High-Speed Scale-of-1,000 Unit for Proportional, Scintillation, or GM Counting**

- Plug-in scaling assemblies
- High-Precision built-in timer
- Optional high-voltage ranges
- 2 microsecond resolution time
- Rapid-reset, six digit register

MODEL DS-1 **$645.00** F.O.B. INDIANAPOLIS

**FREE CATALOG**
Catalog N-8 covers NMC's complete line of nuclear instruments.

NMC

*Foremost Manufacturer of Proportional Counters*

**Nuclear Measurements Corp.**

2460 N. ARLINGTON AVE. • INDIANAPOLIS 18, IND.

---

*Developed originally by the AEC, NYOO. Now available for commercial use . . .*

## The VIBRA-TRAN

New, lightweight Vibrator-Transformer combination unit—makes possible a MINIATURE POWER SUPPLY, FLASHLIGHT-CELL OPERATED for:

- GEIGER COUNTERS
- SCINTILLATION COUNTERS
- IONIZATION CHAMBERS
- PROPORTIONAL COUNTERS
- PHOTOMULTIPLIER TUBES, ETC.

Vibra-Tran combines the functions of vibrator and transformer in one compact unit, weighing approximately 6½ ounces . . . perfect for any portable equipment! When used with a cold cathode rectifier, and corona regulator tube, it will develop:

700 volts at 55 μa
1100 volts at 40 μa
1500 volts at 20 μa
with an input of 3 volts at 55 milliamps.

*The Vibra-Tran is self-starting, and may be used with input voltages from 2.2 volts to 6 volts.*

WE ARE PREPARED TO DEVELOP AND MANUFACTURE MODIFICATIONS OF THE VIBRA-TRAN—OR OTHER ELECTRO-MAGNETIC EQUIPMENT—TO SUIT YOUR NEEDS.

*Write for prices and information.*

**EDKO**

ELECTRONICS ENGINEERING CO.
202 Grand Street, Brooklyn 11, N.Y.

---

Dependable low-cost personnel exposure monitoring instruments

## KELEKET POCKET CHAMBERS

K-700

**K-700 Pocket Chamber (AEC #PIC-2E)**

For monitoring exposure to X-or gamma radiation. Completely sealed, unit is unaffected by atmospheric conditions. 200 mr. range. 4¼" x ½" dia. charged on K-430A Charge-Reader.

K-300

**K-300 Slow Neutron Pocket Chamber (AEC #PIC-5J)**

Measures exposure to slow or thermal neutrons. Use for monitoring areas or source carrying containers in transit. Also to plot isodose line. 200 mr. range. 4½" x ½" dia. charged on K-430A Charge-Reader.

*Write for FREE Bulletin!*

**KELEKET Instrument Division**
266-12 W. Fourth St., Covington, Ky.

Engineers for . . .
Nuclear
propulsion!
We offer an unusual opportunity to engineers or scientists who would like to pioneer in a revolutionary new field — the development of a nuclear-powered aircraft engine.
If you qualify for this project you will work within the continental United States for Pratt & Whitney Aircraft—world's foremost designer and builder of aircraft engines.
Obviously there are multiple advantages! You will be pioneering in work that will give you innumerable chances for professional growth and recognition. At the same time, you will be building a sound, well-rewarded career with a world leader whose sales last year exceeded 800 million dollars.
Career Opportunities for
Engineers
Metallurgists
Chemists
Physicists
It will pay you to investigate — find out how you can build a sound future in the Nuclear Age. Send complete resume immediately to Mr. P. R. Smith, Dept. N-5.
PRATT & WHITNEY AIRCRAFT
Division of United Aircraft Corporation
East Hartford 8, Connecticut

## INDEX TO ADVERTISERS

**DECEMEBER 1954**

Advance Electronics Co., Inc. . 81
Atomic Instrument Co. 3rd Cover
Atomic Power Div., Westinghouse Electric Corp. . . . . 59
Berkeley Division, Beckman Instruments, Inc. . . . . 69
Carboloy, Dept. of General Electric Company . . . . . 68
Central Research Laboratories, Inc. . . . . 61
Consolidated Vacuum Corp. 2nd Cover
Edko Electronics Engineering Co. . . . . 93
Ekco Electronics Ltd. . . . . 83
Electrical & Physical Instrument Corp. . . . . 74
Ford Instrument Company . . . 84
General Electric Company . . 4
Jordan Electronic Mfg. Co., Inc. . . . . 81
Keleket Instrument Div. . . . . 93
Kewaunee Mfg. Co. . . . . 67
Kinney Mfg. Division, The New York Air Brake Company . . . . . 57
Kollmorgen Optical Corp. . . . 62
Lockheed Missile Systems Div. . . . . 80
Mallory & Co., Inc. P. R. . . . . 3
Martin Company, Glen L. 55, 79
Minneapolis-Honeywell Regulator Co. Industrial Div. 4th Cover
National Lead Company . . . 75
Nuclear Development Associates Inc. . . . . 61
Nuclear Measurements Corp. 93
Nuclear Specialty Co. . . . . 66
Penberthy Instrument Co. . . . 82
Phillips Control Corp. . . . . 60
Pratt & Whitney Aircraft Div. of the United Aircraft Corp. . . . . 94
Radiation Instrument Co. . . . 66
Rapid Electric Co. . . . . 68
Searchlight Section . . . . . 82
Solar Aircraft Company . . . . 2
Victoreen Instrument Co. . . . 65
Weston Electrical Instrument Corp. . . . . 63
Where To Buy . . . . . 82

SEARCHLIGHT SECTION
*(Classified Advertising)*
H. E. Hilty, Mgr.

EMPLOYMENT . . . . . 82
EQUIPMENT . . . . . 82

This index is published as a convenience to the readers. Every care is taken to make it accurate, but NUCLEONICS assumes no responsibility for errors or omissions.